

PHYSICS 105 SECTION 001
Winter Semester 2009

SYLLABUS

Instructor: Kent L. Gee (kentgee@byu.edu)
N243 ESC
422-1544
Office Hours: T/TH 4:15-5:00 pm and by appointment

Textbook and other Requirements:

- Serway and Faughn, *College Physics*, 5th-8th editions, Volume 1.
- Homework packet
- Clicker

Course Website: <http://gardner.byu.edu/105w1> (also Blackboard for Quizzes)

Course Objectives: The basic objectives for my Physics 105 course include: **develop an understanding** of physics principles related to kinematics, force, energy, torque, momentum, thermodynamics, fluid dynamics, and waves; **develop problem solving skills** and reinforce mathematics skills at the college-algebra level; **learn to observe and think critically** regarding the physical world around you; **learn to read technical literature** from studying the Physics 105 textbook; **learn to intelligently discuss physics principles** during peer discussions held during class; **gain an appreciation** for the wonders of the Creation and the physical laws that govern the universe.

What I Hope For Each of You: I hope that you walk out of this class at the end of the semester with (1) an increased understanding and intuition for your physical environment, and (2) at the very least, a realization that “Hey, it wasn’t that bad!” ☺ If you’re struggling, see me or the TA’s in the tutorial lab. Also, remember the principles found in D&C 88:118: “...seek learning, even by study and also by faith.” Do not underestimate Heavenly Father’s ability and desire to help you. Hymn #140 took on a deep personal meaning for me during my graduate work: “When sore trials came upon you, did you think to pray?”

Course Identification Number: Each of you will receive a personal identification number for this course. The purpose of this number is to protect your privacy. You will put this number on all exams. Exams will be returned to you sorted by the first two digits of this number in the bins outside N357 ESC. If you were registered in the class on the first day of classes your CID number will be emailed to your Route-Y email address. If you do not regularly use your Route-Y address, please set it to forward your mail to the address that you regularly use. If you were not registered at the beginning of the semester or have not received it by the first day of classes, you can obtain your identification number over the Internet. Go to our course home page and click on the link to Class Identification Numbers.

Late Registration: Because only one day section of Physics 105 is offered during Winter Semester, this class will likely remain at capacity enrollment during the first few weeks of the semester. Given the size of the class, I **cannot make special accommodations** for those who add the class late. If you are one of these students, please be aware that you are subject to the same homework and quiz policies as everyone else and that you have likely used one or more of your free late homeworks or quiz drops (see below).

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Reading Assignments and Pre-Class Quizzes: Reading assignments are shown on the course schedule. You should complete this assignment before coming to class because **reading will prepare you to learn the most possible from the class discussion.** Short reading quizzes will be taken on Blackboard and are due **before 1:00 pm** on the day the assigned material is to be covered in class. They are due at 1:00 pm because I will go through your answers, find common misconceptions, and try to address these during our class discussions. These quizzes are graded by a TA, not necessarily for correctness, but that you gave serious thought to the physics when answering the questions. At my discretion, a small number of pre-class quizzes may be dropped.

Class Discussions: I will carefully avoid using the word “lecture” throughout the semester because classroom time is to be used for physics demonstrations intended to reinforce concepts, *discussion* of the material covered in the reading, and the solving of sample problems. What you learn between 3:00 – 4:15 pm on Tuesdays and Thursdays depends largely on your willingness to be an active part of the discussion.

In-Class Discussion Questions: **Clicker-based** discussion questions will be asked each day to encourage student interaction and thought during class. These scores will be counted as extra credit, up to a maximum of 3%. **YOU MUST BE IN CLASS TO RECEIVE CREDIT FOR THE QUESTION(S)!** Poor citizenship during class (use of Ipods, persistent talking to neighbors, watching sports on laptops, texting on cell phones, etc.) will likely result in the partial or total loss of extra credit points.

Homework: Homework assignments will be submitted over the internet. You will find links on the course home page. These assignments are due at **2:45 pm (just before class)** on the days indicated on the schedule. Additional information about these homework problems is located on the “Homework Submission” document in the course packet.

You are *strongly* encouraged to work in groups on the homework. Of course, the work you submit must be your own. You will be allowed to submit *three* late homework sets in the semester without penalty. (This covers, for example, registering for the class late, illness, marriage, honeymoon, job interviews, etc.) Please see the homework details below for late homework points beyond the first three late assignments. **Late homework can be submitted until midnight on the last day of class, Tuesday, 14 April 2009.**

Tutorial Lab: The tutorial lab for Physics 105 is located in N361 ESC. The teaching assistants’ schedules will be posted via a link on the course website.

Exams: Four unit exams will be given in the BYU Testing Center (Grant Bldg., 2nd floor – as if you didn’t already know that.) They will each be available on the days shown on the schedule. Exams are closed book but you may take in a hand-written, single-sided, 8 ½ x 11 inch piece of paper with **formulas** that have been written by you. (No sample problems, no reduction photocopying, etc.) The exams will be similar to the homework problems and the conceptual questions that you see in class. Each exam will consist of a machine-graded portion and a TA-graded portion. The TA-graded portions may consist of, for example, drawing diagrams to be used in the machine-graded portion and complete problems where you are to show your work.

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Final Exam: The final exam will cover the subject material of the entire course. As with the unit exams, it will be closed book, but you will be permitted the use of a formula sheet as with the other exams. The final exam will be available in the testing center during all of finals week and will be completely machine-graded.

Final Grades: Grades will be determined by the following weights:

Pre-class reading quizzes: 10%
Homework: 30%
Exams: 35%
Final: 25%
In-class discussion questions: Extra credit (not to exceed 3%)

Minimum-guarantee grade breakdowns are:

	B+ 87.0%	C+ 75.0%	D+ 60%
A 94.0%	B 83.0%	C 70.0%	D 55%
A- 90.0%	B- 80.0%	C- 65.0%	D- 50%

Honor Code Standards: Remember that you have promised to uphold the principles of the honor code. First of all, this means **honesty** in your academic work. Cheating will result in a failing grade and possibly other disciplinary action by the university. Also, students are also expected to adhere to the **Dress and Grooming Standards**. Period.

Preventing Sexual Harassment: Harassment of any kind is inappropriate at BYU. Specifically, BYU's policy against sexual harassment extends not only to employees of the university but to students as well. If you encounter sexual harassment, gender-based discrimination, or other inappropriate behavior, please to me, contact the Equal Employment Office at 422-5895 or 367-5689, or contact the Honor Code Office at 422-2847.

Students with Disabilities: BYU is committed to providing reasonable accommodation to qualified persons with disabilities. If you have any disability that may adversely affect your success in this course, please contact the University Accessibility Center at 422-2767. Services deemed appropriate will be coordinated with the student and instructor by that office.

Children in the Classroom: The serious study of the physical and mathematical sciences requires uninterrupted concentration and focus in the classroom. Having small children in class is often a distraction that degrades the educational experience for the entire class. Please make other arrangements for child care rather than bringing children to class with you. If there are extenuating circumstances, please talk with me in advance.

Letters of Recommendation: I am often asked to write a large number of letters of recommendations for students in this class. Although I am generally willing to do so, please keep in mind that a strong letter from me requires an **exemplary effort** from you in this class, an effort that will make you stand out from the other 250+ students. You are generally better served finding a smaller class that has more individual interaction with the professor. Also bear in mind that I do not respond well to last-minute requests and that I cannot generally write a strong letter for you in 20010/2011 for a class you had from me in 2009.

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SCHEDULE

M	T	W	Th	F
Study on your own: 1.1-1.6, 1.9	Jan. 6 Velocity 2.1-2.3 (7 th & 8 th 2.1-2.2)		Jan. 8 HW 1 Acceleration 2.4-2.7 (7 th & 8 th 2.3-2.6)	
Holiday	Jan. 13 HW 2 Vectors, trig. 1.7-1.8, 3.1-3.3, 3.6 (7 th & 8 th 1.7-1.8, 3.1-3.2, 3.5)		Jan. 15 HW 3 2-D Motion 3.4-3.5 (7 th & 8 th 3.3-3.4)	
	Jan. 20 HW 4 Newton's laws 4.1-4.4		Jan. 22 HW 5 Using Newton's laws I 4.5	
	Jan. 27 HW 6 Using Newton's laws II 4.6		Jan. 29 HW 7 Review Exam 1 Exam 1: 1/29-2/2	
End Exam 1	Feb. 3 Energy 5.1-5.4 (7 th & 8 th 5.1-5.3)		Feb. 5 HW 8 Energy, power 5.5-5.8 (7 th & 8 th 5.4-5.7)	
	Feb. 10 HW 9 Momentum 6.1-6.4		Feb. 12 HW 10 Circular motion 7.1-7.6 (7 th & 8 th 7.1-7.4)	
Holiday	Feb. 17 (Monday instruction)		Feb. 19 HW 11 Forces of rotation, gravity 7.7-end (7 th & 8 th 7.5-end)	
	Feb. 24 HW 12 Review Exam 2 Exam 2: 2/24 – 2/27		Feb. 26 Torque and equilibrium 8.1-8.4	End Exam 2
	Mar. 3 HW 13 Torque and rotation 8.5-8.6		Mar. 5 HW 14 Torque and angular momentum 8.7	
	Mar. 10 HW 15 Fluids, solids, pressure 9.1-9.6		Mar. 12 HW 16 Fluid motion 9.7-9.8	
	Mar. 17 HW 17 Review Exam 3 Exam 3: 3/17– 3/20		Mar. 19 Thermal physics I Chapter 10, 11.1-11.3	End Exam 3
	Mar. 24 HW 18 Thermal physics II 11.4-end, Chap. 12		Mar. 26 HW 19 Vibrations, waves Chapter 13	
	Mar. 31 HW 20 Sound waves 14.1-14.6		April 2 HW 21 Acoustical phenomena 14.7-14.13	
	April 7 HW 22 Review Exam 4 Exam 4: 4/7 – 4/10		April 9 Semester Review	End Exam 4
	April 14 Semester Review			

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HOMEWORK SUBMISSION

Homework Problems and Data: The homework problems for this course are on following pages in this packet. Problems 1-1 through 1-5 belong to assignment 1, problems 2-1 through 2-6 belong to assignment 2, etc. **Each of you will do the problems using different data, resulting in answers that are different from those of other students.** Blanks are left in the problems where you can write your data. Your data for the entire semester are available over the internet and can be printed out. Go to our course home page, click on “Online Homework” and then “Homework Data Sheet.”

Class ID Number: If you do not have a course identification number yet, you must obtain one before your homework data sheet will be available. Go to our course home page and click on “Obtain Class Identification Number (CID).”

Format of Internet Submission: At the end of the homework problems there is information about the answers. You are given a range of possible values for each answer, along with the units, if any. For example; 40, 800 J means that your answer will lie between 40 and 800 J. These numbers also indicate the accuracy to which you must calculate the answer. For example, “40, 800 J” means that the answer must be given to the nearest 1 J. As another example, “15.0, 60.0 N” means that the answer must be given to the nearest 0.1 N. In some cases, the accuracy is indicated explicitly. For example, “32000, 39000 \pm 100 km” means the answer must be given to the nearest 100 km. **Do not put units** on your answer, and write your numbers appropriate for the units indicated. If a very large or very small value needs to be written in **scientific notation**, indicate the exponent of 10 with an “e”. For example, an answer of 3.00×10^8 would be written 3.00e8, and 1.6×10^{-19} would be written 1.6e-19. **Do not put any spaces in the number nor any commas**; for example, you may have to submit an answer like 120000, but don’t use commas.

Submission: After working the problems, submit your answers over the internet, **by 2:45 pm on the assignment due date.** Go to our course home page and click on the assignment number. Fill in the answers as indicated. Be very careful in submitting your answers. Also, don’t submit the answers until you are absolutely sure you have exactly what you want to submit.

When you submit homework, you will be told if it was correct or not. Each correct homework problem is worth 5 points and each incorrect problem is worth 0 points. For incorrect answers you will be told the correct answer and given a new set of data for that problem. You can then resubmit a new answer for full credit. **However, homework can be submitted a total of three and only three times.** Do **not** resubmit previously correct answers – leave those spots blank.

Late Submission: Correct answers submitted after the due date as part of any of the three tries are considered late and receive half credit. You will receive full credit for late points on the three assignments with the most late points (everyone gets three free late assignments). You will receive half credit for all other late points. All late assignments must be submitted before the start of the first reading day. **No assignment submitted after 11:59 pm on Tuesday, 14 April 2009 will receive credit.**