

Physics 4C Syllabus

Hartnell College • Spring 12

Principles of Community:

Above all, this class is a learning community. The principles of that community have been determined by you as follows:

Instructor: Dr. Haag
Office: M-10
Phone: 831-770-7017
Email: bhaag@hartnell.edu

Physics
Webpage: <http://www.hartnell.edu/physics>

Office
Hours: M–T 1–2 pm and by appointment

Required Materials:

- **Physics for Scientists and Engineers: A Strategic Approach with Modern Physics 2nd Ed.** and MasteringPhysics
- 1 composition notebook suitable for a journal*
- 15 cm clear plastic ruler and protractor
- scientific calculator
- usb / thumb drive

Course Objectives: You will be expected to have gained a thorough understanding of physics by attending all class meetings, actively participating in the learning community, and completing all assignments. More specifically, we will cover the topics of: waves, sound, the thermal properties of matter, the kinetic theory of gases, heat transfer, the laws of thermodynamics, heat engines, reflection, refraction, interference, diffraction of light, lens systems, electromagnetic waves, Special Theory of Relativity, photoelectric effect, Compton effect, Bohr Model for the hydrogen atom, and elementary quantum mechanics. If you don't know what any of that is –you will by the end of the semester!

In addition the learning outcomes of the course are as follows:

- Given information about a particle or simple mechanical system of particles subject to forces and torques a student will be able to predict the subsequent behavior of the system conceptually and quantitatively.
- Given information about the mechanical energy of a system a student will be able to trace the flow of energy into other forms and use conservation of energy to predict the state of the system at later times conceptually and quantitatively.
- Given information that describes the properties of a simple fluid a student will be able to characterize and predict the behavior of the fluid
- A student will be able to set up laboratory equipment safely and efficiently, plan and carry out experimental procedures, identify possible sources of error, implement techniques that enhance precision, reduce and interpret data by hand and/or using computers and report verbally and in written language the experimental data, results and conclusions.

Course Content: Chapters 12–25 in **Physics for Scientists and Engineers**

Attendance: Attendance will be taken at the beginning of each class session. The standard attendance policy from the Hartnell Schedule of Classes will be adhered to:

“Any lack of attendance which leads an instructor to judge that unsatisfactory progress is being made may result in the student being dropped. Absence from a full semester class in excess of two weeks (consecutive or non-consecutive) may result in the

instructor dropping the student. That is, a student may be dropped after missing one more class meeting than twice the number of class meetings per week”

This amounts to 11 absences, excused OR unexcused. In addition, 3 tardies can be counted as 1 absence.

Cell phones: If your phone rings during class or lab, you will be obligated to bring snacks for the next class meeting. This policy applies if you are caught texting or otherwise using your phone inappropriately* during class or lab time. (* this includes using your phone as a calculator; as per the supplies list, please have a scientific calculator separate from your phone.)

Homework: Homework problems will be assigned and collected weekly online. Assignments will be given out in class as well as online. Working problems is one of the most important ways you can learn the material in a physics course. Working outside of class with classmates is an excellent way to get the homework done and get the most out of the assignments.

The homework will be graded as per the guidelines specified via Mastering Physics: <http://www.masteringphysics.com/>

Only two late homework assignments will be allowed for credit.

Laboratory: You will be doing an experiment or exercise each week in the laboratory section of the course. Details will be given to you during the first laboratory session.

Note: Experiments must be completed for at least $\frac{3}{4}$ of the scheduled labs or no credit will be given for the entire course.

Celebrations of Learning: Several one-hour “celebrations of learning” will be given throughout the course. They will generally consist of three problems reflective of class discussions. One or more of the problems may be taken from the homework assignments. Sample Exam problems may also be found on the website. You are allowed one 3x5 inch card with formulas (**points will be deducted for anything other than formulas or if you use anything larger than a 3 x 5 card points will be deducted**). In addition you will be expected to rework each COL (if the score is lower than an A). In return, at the conclusion of the semester you will receive half of the points back on your exam with the lowest score. A reworked exam is due one week after the exam is turned back.

No makeups will be given without a prior arrangement agreed upon between student and instructor. Make-up “celebrations” will be partially verbal.

Journals: If you opt to keep a journal, you will be expected to make an entry of your learning and observations for each class meeting. The journal will be collected once a

week. Journal entries are only to be made **after class**. Two insufficient or missing journal entries will be allowed before your journal is discontinued.

Academic Dishonesty / Cheating:

As per the Hartnell policy from the Schedule of Classes:

“ Dishonesty includes, but is not limited to, in-class cheating, out-of-class cheating, plagiarism, knowingly assisting another student in cheating or plagiarism, or knowingly furnishing false information to College staff, faculty, administrators or other officials. Following are definitions of in-class cheating, out-of-class cheating, plagiarism, and furnishing information. These are not all-inclusive, and the list itself is not meant to limit the definition of cheating to just those mentioned.

1. In-class cheating: during an examination or on any work for which the student will receive a grade or points, unauthorized looking at or procuring information from any unauthorized sources or from any other student’s work.

2. Out-of-class cheating: unauthorized acquisition, reading or knowledge of test questions prior to the testing date and time; changing any portion of a returned graded test or report and resubmitting as original work to be regarded; or presenting the work of another as one’s own for a grade of points.

3. Plagiarism: unauthorized use of expression of ideas from either published or unpublished work(s) as a student’s own work for a grade in a class. This also includes the violation of copyright laws, including copying of software packages.

4. Furnishing false information: forgery, falsification, alteration, or misuse of College situations.”

If a student is discovered to be cheating, a zero will be given on the assignment immediately and a meeting with the instructor will be scheduled. If a second instance occurs, the prior policy will be invoked in addition to further action taken with administration and the possible result of a failing grade in the course.

Final Grade: Your grade in the course will be based on the total number of points* you receive for the following:

Item	Points (approximate)	% of Total (approximate)
Laboratory	100	14
Journals	50	7
Homework	100	14
Quizzes	50	7
Celebrations of Learning	200	29
Final Celebration	200	29

Letter Grade	Percentage
A	90 - 100%
B	80 - 89%
C	70 - 79%
D	60 - 69%
F	0 - 60 %

Final Grades will be determined by calculating the percentage of your total points earned relative to the total possible points for the course and then applying that percentage to the following table:

*Additional points for extra credit projects, extra or fewer “celebrations of learning”, the Physics Olympics and other subjective factors may change these percentages somewhat.

The Final Celebration of Learning for this class will be given Thursday, May 24 from 8 - 11 am.

Tentative Schedule of Topics:

Week Starting	Topic	Chapter
Jan 23, 2012	Rotation of a Rigid Body	12
Jan 30, 2012	Newton's Theory of Gravity	13
Feb 6, 2012	Oscillations	14
Feb 13, 2012	Fluids and Elasticity	15
Feb 20, 2012	COL 1	12–15
Feb 27, 2012	A Macroscopic Description of Matter	16
Mar 5, 2012	Work, Heat, 1st Law of Thermodynamics	17
Mar 12, 2012	The Micro/Macro Connection	18
Mar 19, 2012	Heat Engines/Refrigerators	19
Mar 26, 2012	COL 2	16–19
Apr 2, 2012	Spring Break	9
Apr 9, 2012	Traveling Waves	20
Apr 16, 2012	Superposition	21
Apr 23, 2012	Wave Optics	22
Apr 30, 2012	Ray Optics	23
May 7, 2012	COL 3	20–23
May 14, 2012	Optical Instruments	24
May 21, 2012	Modern Optics/Matter Waves	25