Physics 14(Section 3214)
Course Outline
Fall 2015

Physics 14 is designed for the student who is interested in a more conceptual and less mathematical approach to physics. It is a survey course introducing the topics of mechanics, heat, sound, electricity and magnetism, light, and modern physics. The emphasis will be on developing conceptual understanding of the laws of nature through hands-on experiences, laboratory experiments, and computer interactions, in addition to lectures and demonstrations.

COURSE: Physics 14 (4 Units)

Lecture   MW: 04:00 PM-05:30 PM   In SCI 101
Lab)   F: 02:30 PM-05:30 PM   In SCI 101

TEXT:

Hewitt's *Conceptual Physics* (13th Edition, 2010.)

INSTRUCTOR:

Asma W. Said
Office hours: M 05:30 PM -06:00 PM
              F 02:00 PM-2:30 PM in Room SCI 217

email: said_asma@smc.edu

The spam-blocking software used by the school occasionally blocks emails sent to me by students. If you wish to contact me by email, you should send email from a Santa Monica College email account, as these emails will not be affected by the spam blocker. If you submit your homework through an off-campus email service and the homework does not arrive in my inbox, you will not receive credit for the homework.

Students' Learning Outcomes:

    1. When presented with a variety of natural phenomena from everyday life, the student will be able to give qualitative explanations and solve simple quantitative problems using basic physics principles (i.e. Newton's laws).

    2. When doing a laboratory exercise and writing a report, the student will be able to state a clear and testable hypothesis, take careful measurements, estimate uncertainties, and draw appropriate conclusions based on gathered data and on sound scientific principles.

PREREQUISITE: NONE

Attendance: Get to class on time and do not wander in and out of class while class is in session as it is rude to your fellow students. If on a certain day you do need to leave class before class is over, please inform me before class or send me an email. Exit the classroom quietly and without disturbing others.

Please note that important announcements are often made at the beginning of class. Attendance will be taken each class period by initialing your name under the appropriate date on an attendance sheet or using my IPAD application. After class beginning, you will not be able to sign in for that day and you need to provide a written explanation about your tardy. In order to do well in the class it is important that you attend class and pay attention, and it is your responsibility to attend class and learn, but note that **I do not count attendance in your class grade**.

Laboratory (150 points): Laboratory sessions for the course will be integrated into the course material so that they are used to reinforce and expand your understanding of the topics being covered. You will be told which lab outlines to print before class. All lab instructions are available on-line from e-Companion, instructor homepage, or Physics homepage. Although you will be working in groups of four, the analysis and handouts are to be completed individually and must reflect your own thoughts and reasoning. The laboratory experience is mandatory and you are required to submit written reports. Reports are to be written individually, and should be submitted by the end of the lab. There are no make-up labs.

Quizzes (140 points): 7 quizzes are tentatively planned, one of which will be "dropped". Four of these quizzes are going to be announced in advance and they appear in the class tentative schedule; the other four quizzes are "Pop-quizzes".

Final Exam (210 points): Please note that the date and time for the final exam are:

Friday, Dec., 18th, from: 3:30 pm-6:30 pm.
ALL STUDENTS MUST ATTEND THIS EXAMINATION AT THIS TIME.
The final examination time is a required class meeting, and all full semester classes must meet at the time specified on the final examination schedule. Any exceptions, changes, or conflict resolutions must be approved by the Department Chair.

Homework (100 points):

Homework assignments will be submitted twice. One of these submissions is online, and the same homework must be submitted on paper. The grade will be equally divided between both sets of homework. The online homework must be submitted on the due date 11:59 pm, and the one on paper must be submitted in class. In order to enroll in this class use the class key (MPSAID22785) through the website www.masteringphysics.com.

Turning in the Homework: In addition to submitting the online homework, a hard copy of the homework is due at the *beginning* of class on the due date. You should be working on the problems in a homework assignment as we work our way through the material in class.

Homework turned in during class will be deducted 5%. Homework turned in after class on the due date will be deducted 10%. Homework will not be accepted after 11:59 pm on the due date. If you need to miss class for a reason other than a medical emergency, you will need to hand the homework in early or arrange to have someone else bring it in.

Homework and Academic Honesty: Most physics students will seek homework assistance from their classmates from time to time. Although cooperation on homework assignments is generally quite useful, the main goal of the course is for you to develop your own thinking skills. It is therefore important that you do not allow discussion of a homework problem with another student to degenerate into a scenario where you are simply copying his/her work.

To prevent this from happening, I strongly encourage the following: When you approach another student for assistance with a homework problem, ask him/her to explain to you orally (without writing) how the problem was solved. If an oral discussion does not suffice, you may exchange written hints on paper, provided that nobody turns in that particular piece of paper for credit. However, YOU MAY NOT LOOK AT WORK WHICH ANOTHER STUDENT INTENDS TO TURN IN; this creates too much temptation for copying. Phone conversations, for example, are ideal for exchanging the right level of information.

IF TWO ASSIGNMENTS ARE SIMILAR TO AN EXTENT WHICH CAN ONLY BE EXPLAINED BY COPYING OR A SIMILARLY DETAILED SHARING OF INFORMATION, **BOTH** ASSIGNMENTS WILL RECEIVE A SCORE OF ZERO. ANY STUDENTS WHO COPY OR WHO ALLOW THEIR HOMEWORK TO BE COPIED WILL RECEIVE A ZERO ON THE HOMEWORK ASSIGNMENT. IF THIS HAPPENS TWICE, YOU WILL RECEIVE A ZERO HOMEWORK GRADE FOR THE ENTIRE SEMESTER. Other Students' Information: You should also acquaint yourself with other students who might be able to help you. In the space below, write the contact information of three other students:

Name	Phone Number	email

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RULES FOR HOMEWORK

1. General Appearance of Assignment: PROBLEMS VIOLATING THE FOLLOWING RULES WILL NOT BE GRADED.

a. Handwriting should be neat, legible, and reasonably dark.

b. Problems must be solved in exactly the order assigned. That is, problem 1 should be solved first, then problem 2, etc. Once I encounter problems appearing in the wrong order, I will stop grading the assignment.

c. A reasonable attempt must be made to follow the rules given here. An assignment which shows little or no effort to follow the rules described here will not be graded.

2. Write your name, date, and assignment letter (assignments are listed as 1, 2, 3, etc.) in the upper-right corner of the front page. Staple all pages together at the upper-left corner.

3. YOU MAY WRITE ONLY ONE EQUATION OR STATEMENT PER LINE. After you have written one equation on a line, go to the next line to write the next equation.

If you write small and find this wasteful, you may draw a line down the middle of your paper to make two columns, and then begin working down the right side of the paper after you have completely used up the left side.

4. The following steps must be followed when STARTING a homework problem:

a. Draw a diagram which presents all information given in the statement of the problem. Any symbolic variables (such as x, t, F, etc.) must either appear in the diagram or be listed next to the diagram.

b. If appropriate, use your diagram to define a coordinate system.

c. If information is given as a numerical value (such as 3.0m, 12.0s, 8.0N, etc.), a symbol (such as x, t, F, etc.) must be assigned to the numerical value. For example, if a problem says that a box has a mass of 3.0kg, you should write "m = 3.0kg" on your paper, on or next to the diagram. Do not simply write "3.0kg"; assign a symbol and write "m = 3.0kg".

5. To begin COMPUTATION: Start your solution by stating a well-known equation you have seen either in lecture or in the text (e.g. $F = ma$, $\Delta x = v_{av}\Delta t$, etc.) that is appropriate to the problem at hand. The first equation in a solution should NEVER have numerical values plugged into it; it should be strictly in "variable" form.

6. USE THE CORRECT UNITS.

a. Every numerical answer must include the correct unit.

b. Any time a number representing a physical quantity appears in a solution, units must be included. Do not insert numbers into an equation without inserting the accompanying units.

Example:

$\Delta x = v\Delta t$
$\Delta x = (4)(2)$
$\Delta x = 8m$

WRONG

Example:
$\Delta x = v\Delta t$
$\Delta x = (4m/s)(2s)$
$\Delta x = 8m$

RIGHT

c. Check to make sure that the correct unit for your answer follows from the computation; do not just "tack on" the correct unit at the end of the problem. This generally requires a simple computation. An example follows:

<u>Example</u>: Suppose you wish to compute the acceleration of a 5kg object subject to a 10N force. You would write:

$$a = \frac{F}{m} = \frac{10N}{5kg} = \frac{10\cancel{kg}m/s^2}{5\cancel{kg}} = 10m/s^2$$

Notice that expanding "N" into "kgm/s^2" allows you to cancel the "kg's", leaving m/s^2, which is the correct unit for acceleration.

<u>7. Use lines to separate a problem from the other problems on the same assignment</u>.

<u>COURSE OBJECTIVES</u>

On successful completion of this course, the student will be able to:

Participation (100 points): Starting the second week of classes, points will be awarded for class participation for approximately 50 points. Tardiness, inattention, and lack of preparation will result in a loss of these points.

Midterm Exams (300 points):

There will be three midterm exams and one final exam in this course. Each midterm exam is out of 100 points. The exams may consist of both multiple choice and free response problems. The final exam will be cumulative. **There will be no make-up midterm exams**. If you are unable to take one of the exams you must notify me before the test. If you have a legitimate verifiable excuse, the percentage from the final exam will be used to replace the missed exam. All exams are closed notes and closed book, but a formula sheet will be provided. You will need a calculator.

The dates for the midterms are:

<div align="center">

Midterm #1 September 25th
Midterm #2: October 23rd,
Midterm #3: November 20th, 2015

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You may bring a single HANDWRITTEN 3"x5" note card to each of the first three exams, and a single HANDWRITTEN 5"x8" note card to the Final Exam. Blank note cards will be provided a week before each exam by the instructor. You must use the blank note cards provided by the instructor. You will not be allowed to use formula sheets prepared on your own paper.

Anyone copying from another's quiz or exam will receive a grade of ZERO for that assignment, as will the person from whom the answers were obtained. An immediate formal report will be made to the College Disciplinarian.

<u>Studying for an exam</u>: Before an exam, review all of the relevant homework problems. Make sure that you can solve all of them cold, closed book, no notes. If you are unable to do any of the problems closed book, review your notes, close the book again, and start from scratch. Repeat this process until you can do all of the homework problems without notes.
If possible, try to solve unassigned problems from the book.

<u>Missed Exams</u>: In general, no makeup exams will be given. In case you missed an exam for any of the reasons listed below, and only under the conditions listed, I will assign a grade that is the average of other exams to replace your grade for the missed exam.
Medical Emergencies: If you miss an exam due to medical emergency or acute illness, you must provide a written medical excuse. If at all possible, please advise me of your absence before the exam begins. Non-emergency visits, which you would normally be able to schedule around an exam (regular checkups, etc.) do not generally constitute an excuse for missing an exam.
    If you expect to miss an exam for any reason other than a medical emergency or acute illness, you must inform me about it BEFORE the day of the exam, and will be considered excused only under unusual circumstances. You must provide a written document supporting your excuse.
    In rare circumstances (such as a family emergency) a conflict may arise which forces you to leave town before receiving a response from me on your request to miss an exam. Even under such circumstances, I must receive a notification from you, either through email, or by using a written notice. before the exam occurs, and may still choose not to consider as an insufficient reason for missing an exam.

NOTE: If you wish to drop the class, for whatever reason, it is YOUR responsibility to ensure that the appropriate paperwork is completed and submitted in a timely fashion.
The Physical Science Department at Santa Monica College strives to ensure that all sections of the same course have similar grade distributions and grading policies.

Grading: In summary, your grade *approximately* breaks down as follows:

Final Exam	210 points	21%
Midterm Exams	300 points	30%
Quizzes	140 points	14%
Participation, and	100 points	10%
homework	100 points	10%
Lab Reports	150 points	10 %
Total	1000 points	100%

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Your letter grade for the course will be determined using the scale below.

Percentage of total points you obtain	Your course grade
90% or greater	A
80% or greater	B
65% or greater	C
50% or greater	D
less than 50%	F