

## A) General information

Physics Fall 2019

Instructor: Ronald Francis

PHD in Experimental Physics: (MIT).

Thesis topic: Dynamic light scattering in 2D melting transition of colloidal crystals

BS in Applied Physics (Caltech).

Advanced classes in statistical mechanics, quantum mechanics and fluid mechanics.

Additional classes in theory of education

Instructor of AAPT New England Region Physics Bowl Champions (2 separate years)

Email: francisronald@deanza.edu

Homepage: <http://nebula.deanza.edu:16080/~ronald/> (probably not working)

Office: E34A ( I'm not there very often...too far away... find me in tutorial center S43 or physics lab )

### Office Hours and Online Help

Office Hours in S43 (tutorial center). If I'm not there (rarely) I will be in or near the physics labs (S11 and S17).. sometimes I'm outside the labs on the grass helping students.

Mon 10:30 to 11:20

Tues 10:30 – 10:55

Wed 10:30 to 11:20

Thursday 12:30 to 1:20

Friday 10:30 -10:55 (in lab)

Students can also email me any time (usually evening works well). I'll often respond within 90 minutes.

### Length of this syllabus

This syllabus is a little long but it is not complicated. I provide a Short Version for a quick basic overview. The class rules are straightforward, and make sense once you get the hang of it. Part of the reason it is long is because it is attempting to be very clear or it is attempting to cover many possible situations (reducing personal biases) in order to be fair. So do not "stress out" about the syllabus; just read it, follow the basic rules and you'll be fine in most cases. (See Short Version to get the basic rules. Basic rules also in bold here)

**Student Success center**:: <http://www.deanza.edu/studentsuccess/>

Deanza college has tutoring services and I highly recommend that every student get regular tutoring if she / he needs it or even if you don't need it. I will also try to set up group tutoring session by asking about the times that they are available. The tutorial center in S43 can often find a tutor for a group session. During summer session tutors may not be available

### Non-discrimination policy:

My belief is that any and every person is capable of learning physics regardless of any personal, cultural or physical characteristics. I won't tolerate attitudes or behaviors that are classist, racist, sexist, homophobic or otherwise discriminatory in class. We shall attempt to use gender neutral language and respect the fact that people of different backgrounds can bring unique and useful perspectives to every discipline including physics. In teaching I will use clear English spoken at a slow-moderate pace and often avoid idiomatic expressions. Terms that may be unusual will be defined.

### Textbook and pre-requisites

You can use any edition of the books listed below, some other equivalent textbook, or no book at all.

Physics 10 uses Hewitt's Conceptual Physics.

Physics 50 uses James Walker's Physics

Physics 2A – 2C series uses Halliday, Resnick and Walker

Physics 4A – 4C series uses Physics for Scientists and engineers by Serway and Jewett.

Physics 4D uses Modern Physics by Serway Moses and Meyer 3<sup>rd</sup> edition

**You are not required to buy any specific textbook but you must use some textbook (or online source) in order to do required** chapter outlines (summaries)... but it could be any equivalent book that you like (or is inexpensive) or is online. Textbook HW assignments from the “official” textbook will be made available to you at the library or by email, if you choose to not use the “official” textbook.

**Basic Short Overall description of class (attendance, quizzes and tests):**

- 1) There will usually be 1 to 2 short (approximately 10 minutes) quizzes for every 4 hours of lecture. Quizzes, (of length 5 to 7 minutes) are given nearly exactly at the beginning of class usually 5 to 7 minutes (so important to come to class on time). Quizzes will be on material covered in previous three lectures, and recent readings, and focus on a topic that you will be informed about. There are two midterms and a final.
- 2) Students are expected to be on time for every session. Every two tardies (latenesses) – for any of the sessions (lab or lecture) is equivalent to an absence. Every absence after the 4<sup>th</sup> absence results in a half-point deduction on the final course grade.
- 3) Save all of your quizzes, essays, exams etc... so that you have a record of your grades and in case I accidentally make a recording error and need the graded work a 2<sup>nd</sup> time.
- 4) You should record all of your grades in a single spot so that you, or I, can easily estimate your “current” grade at any time in the course.

**Exam dates:**

Please reserve these dates; there are no make-ups

Final Exam : See school calendar. This date is set by the school administration

**Reserve the Final Exam Date NOW ! No make-up finals or alternative dates will be allowed**

Midterm #1: Week 5: Phys 2B Mon Feb 3<sup>rd</sup>, Phys 4C Thurs Feb 6<sup>th</sup> , Phys 50 Wed Feb 5<sup>th</sup>

Midterm #2: Week 7 or 8: Phys 2B Mon Feb 24<sup>th</sup> (or 25<sup>th</sup> if 24<sup>th</sup> is a holiday), Phys 4C Wed Feb 26<sup>th</sup> , Phys 50 Thurs Feb 20<sup>th</sup>

**For summer 8 week classes:**

If you are unable to attend the last few days of class due to other academic commitments, then please let me know ASAP so that arrangements can be made

**Other important dates:**

Students should see their own personal “My Portal” webpage for important dates like the last day to add and withdrawal dates. Here are a couple of key dates:

**Last Day to Add or Drop (with no grade record):** (Check school website for date... usually about 10 days into the quarter or about 7 days if a summer class)

Students who have not added a class by this date will not be able to remain in class – no exceptions! Even if students have an add code, the code will expire after that date, and they will not be allowed to register! There is no grade of record issued for students who drop on or before this date. Such drops do not count towards the “three attempts” limit. Students who do not drop by this date must receive a grade, which could be a “W” (withdrawal). “W”s now count toward the “three attempts” limit.

**Last Day to Withdraw with a “W”** (Check school website for date... usually about 8 weeks into the quarter or about 5 weeks if a summer class)

A students who do not withdraw on or before this date must receive a letter grade, but cannot receive a “W”. A students should evaluate her/his status before this date – if a student is not doing well, neither the student nor I will be able to withdraw the student after this deadline. Withdrawing from a class is the responsibility of the student and you must do it before the deadline.

**B) Course Goals:**

Critically examine new, previously un-encountered problems, analyzing and evaluating their constituent parts, in order to construct and explain a logical solution utilizing, and based upon, the fundamental laws of physics

In order to test lab skills students are expected to gain confidence in taking precise and accurate scientific measurements, with their uncertainties, and then with calculations from them, analyze their meaning as relative, in an experimental context, to the verification and support of physics theories.

Students should be able to

- a) identify and use fundamental ideas to answer conceptual questions clearly
- b) systematically use fundamental equations that are useful in solving problems.

### **Basic description of the course**

The “lecture” time will consist of formal instructor-led lectures, as well as collaborative work among students. It is important to obtain and understand all class notes as not all of the material in the class is in the text and **usually 90% of the problems on the quizzes and midterms will involve material that was discussed in class in detail.**

The instructor’s class notes will not be made available to students except in the case of excused absences. Therefore it is your responsibility to either take notes or get notes from another students if you did not take notes.

It is important to review notes nightly in order to identify items that you do not understand. . If you don’t understand what is happening in class, then make a special note to yourself (in a right hand column) in order to get help from someone including possibly the instructor.

If you do not understand very well the material covered during class, then you are unlikely to do well on quizzes and tests. The textbook should be seen as one of many resources that supplement class instruction; knowing some problems / ideas from the textbook problems is only part of being prepared.

**Students are expected to learn and understand how to use the fundamental laws and theorems / principles discussed in class and also how to derive any theorems / principles. Note: fundamental laws CANNOT be derived (proven) by other ideas or laws (that is what “fundamental” means). Students are also expected to know and understand the human definitions used to describe nature.**

### **C) Calculation of Grade:**

Please keep a record of all of your grades as this will make it easier for me to assess what your “current” grade is, at any time in the class. You should be able to estimate your own “current” grade using the chart below.

#### **For classes with lab:**

Final: 35 %

Midterms 17 %

Quizzes 20 %

Labs 12 %

Practice Notebook 7 %

Chapter Outlines 2 %

HW for Effort 4 %

HW for Content 3 %

HW Bonus 2%

minus Penalties for lateness / unexcused absences

(in class with QL (Phys 4D), the QL submissions are worth 1 % and quizzes 19%)

#### **For classes without lab:**

Final: 35 %

Midterms 19 %

Quizzes 26 %

Practice and Lecture Review Notebook 8 %

Chapter Outlines 2 %

HW for Effort 6 %

HW for Content 4 %

HW Bonus 2%

minus Penalties for lateness / unexcused absences

There is no “extra” work that can be done at the end of the class to try to improve your final course grade. It is also considered inappropriate to pressure instructors to give a grade that is higher than the grade that was earned based on the charts above.

#### **D) Materials Needed**

Lab classes require 2 composition-style unruled notebooks (see website for sample).

Non-lab classes require only 1 composition-style unruled notebooks (see website for sample).

Unruled means that there are no horizontal lines in the page; each page is blank white paper.

(In addition to the required composition notebooks) 1 other note-taking notebook (of any kind) is recommended but it will not be graded.

A 3 ring binder loose-leaf notebook is very recommended, but not required, to help organize homework, handouts, lecture notes, etc. 3-ring binders don't work well (physically awkward) for writing notes but are good for organizing. So you could take notes on blank white paper and then punch 3 holes to place into your 3 ring binder. When I was in school I did work on blank white paper and then used a 3 hole punch to put it into the notebook. A 3 ring binder loose-leaf notebook with a good three-hole punch can do wonders for keeping things organized.

In my experience a spiral notebook or other types of bound notebooks do NOT allow for good organization of materials (but you can use any notebook for your own personal lecture notes; I will not be grading that notebook).

Straight Edge, Calculator. Also helpful are Protractor, Circle Template, Regular white copy paper for doing HW and other assignments that are collected.

(Calculators are not allowed on any quizzes, midterms or the final. They can be used on THW, PH, Lab and other class work.)

#### **NO TYPED WORK IS EVER ALLOWED IN THIS CLASS.**

#### **E) Practice Notebook**

Each student will have a separate Practice Notebook. This notebook is for your

Practice assignments. The composition-style unruled notebook cannot have any horizontal ruled lines in it – it must consist of blank white paper. Physicists do not like to break symmetry by preferring certain directions over other directions and so horizontal lines are frowned upon. This notebook is separate from any lecture notes that you may take for your own personal / private use. (I do recommend that you take notes during lecture in your own personal / private notebook).

Students have one week to obtain the proper format (unruled notebook). A google search for “unruled composition notebook” will yield several vendors. Sometimes the campus bookstore has them (but call first). Occasionally I will provide them for a class. After one week the penalties are 20% on each assignment in the practice notebook.

Bring your Practice Notebook to class everyday; it could be collected at any time for grading. If it is collected and you do not turn it in ontime, then you can turn it in the next class day; the penalty is that work for the previous three class days will be considered late (no credit)

Some codes:

PC: Practice in Class: These assignments are practice questions and problems that are started in class with one other student. These assignments must be completed at home on the same day.

PH: Practice at Home. These assignments are questions or problems that are assigned either in class or by email, and are due at the stated due date.

**These 2 types of assignments (PC, PH) are the only assignments that go in the PN. Students will be told when an assignment is a PC or a PH. Textbook Homework assignments (THW) are different; these assignments come from the textbook and are done separately and also turned in separately. Chapter Outlines (CO) assignments are also done separately and turned in separately.**

**1) Practice assignments: these go into your Practice Notebook**

Some practice assignments are done in Class (PC assignments) and some are done at Home (PH assignments). For your course grade, PH assignments are worth 2 to 4 times the value of PC assignments. PH assignments are given to students by email, or in class, and are done at home. **Usually 48 hours lead-time is given to do PH assignments, but rarely only 24 hours will be given.**

**a) Practice in Class (PC assignments) are 100 points each**

After each short 15 to 25 minute lecture that I often give, students will do "Practice in Class" questions and problems. Each practice assignment must be labeled in a RED COLORED BOX like this "PC 10/4/15 A". There is a 20 % deduction for work that is not labeled properly. The clear label allows me to grade the work efficiently. Occasionally PC assignments started in class will not be finished in class. In those cases, the work must be finished at home in a different color (such as green or blue ink) . The finished work is due the next day.

**b) Practice at Home (PH assignments) are 200, 250, or 300 points.**

These will be assigned either in class or by email and are due at the stated due date. (Usually I give these assignments at least 36 hours before they are due. Occasionally only 24 hours will be given especially for summer classes. The assignments are labeled like this "PH 10/9/15". The label must be placed in a RED COLORED BOX. (see sample). There is a 20 % deduction for work that is not labeled . The clear label allows me to grade the work efficiently.

For example, I might send you an email that says (PH 2/23/19). Attached to the email will be the assignment. This means that the assignment is due on 2/23. The PH assignments allow me to emphasize material that the textbook fails to emphasize or material that is important but cannot be allowed to take up valuable class time.

Practice Notebooks will be collected periodically for grading (about 5 or 6 times over the entire course).

**Need for neat Practice Notebook**

Your notebook must be kept neat. There is a 10 % deduction for each of the following or similar distractions.

- a) assignments that are very messy
- b) assignments that are falling out of the notebook
- c) assignments that are not stapled in correctly (see "Formats" document)
- d) any paper that is showing outside of the perimeter of the notebook.
- e) assignments out of order (by date) by more than 4 days

Assignments don't need to be in exact order but not off by more than 2 days

**F) Chapter Outlines (COs) (a summary of the main ideas in the chapter)**

The chapter outline is basically a summary of the main ideas in the chapter organized in any way that makes sense to you. Feel free to make charts, diagrams, flowcharts, venn diagrams etc... the must be hand-written (no computer) on blank sheets of paper (no lined paper)

You are required to do minimum of 3 sides of paper (3 completely filled ! pages) for each chapter and submit it when it is due. You will be told the due date during class announcements. You can use more pages if you need to and pages must be stapled (vertically in upper left corner – in the top left 1.0 square cm of upper left corner - so that the pages can be turned easily).

You must unruled white regular size copy paper; there is a 10 % penalty for the wrong paper. It must be a minimum of 300 words (most students do about 500 words and 3 pages). You can include diagrams but this is not a substitute for the word requirement.

## **G) Textbook HomeWork (THW)**

These assignments will be emailed to you in advance (at least 3 days) (and are occasionally on my website) and you will be given a due date.

It is critical to do all of your THW. The attention you give to the assignments is crucial to your success in this course. Doing physics is a skill that you develop, and practicing that skill is necessary. Don't just "do" the homework; instead think about what each problem is trying to teach you and try to organize those things in your own brain if possible, or write down all of these things. Your understanding must improve slightly with each question or problem, or else you aren't really learning (you are just "doing"). It is possible to "do" all of the HW and still not get a good score on a quiz or midterm that involves that HW material.

In each chapter you will be given approximately 8 Qualitative Conceptual Questions (CQs) that require a clear written explanation and approximately 10-20 Quantitative Problems (QPs) that require a mathematical solution. CQs are more challenging and are often more important than (QPs), because you need to have "true" understanding in order to answer a qualitative question whereas a quantitative question allows you to "fake" your way through to an answer by using some equation).

CQs will count for about 50 % of the grade for the HW. QPs will count for the remaining 50 %.

Your work must be your own. You may consult with students after you have made an attempt to do THW problems on your own. You may not copy another person's THW. Instead, contact them for help, and then do your own work. If your THW has been obviously copied from another person's THW then you will be guilty of cheating and reported to the appropriate authorities (see below). The school's honor code is in effect on this matter.

In most cases, the final answers to the odd THW problems are in the back of the text. We will not have much time in class for going over THW problems; see a tutor or email me for help if you get stuck on a THW problem.

### **ii) Format of THW (for both conceptual questions AND quantitative problems)**

There is a 15 % penalty for each aspect (indicated below) of the required format that is not followed.

a) Questions are to be done on **BLANK white copy paper (no ruled lines on the paper)**.

**Divide each paper that you use into two vertical columns and do one or more questions / problems in each column (see Formats document)**

b) Each question / problem must be labeled with a circle around the Question or Problem number like this (OQ3) or (P17). Each question of problem must be accompanied by a well-labeled physical diagram. **If there is no diagram of the physical situation, then no credit is given for the problem. Repeat: no diagram means no credit.** Physicists use diagrams to build intuition about physical situations and make geometry clear to themselves or other people trying to understand the question / problem involved.

Very infrequently there may be a question that makes no physical reference (question does not mention any physical object like a sled, dog, book, electric field, engine, light ray, electron, ocean, person, table, rocket.etc...). **In those cases create your own physical situation.**

The diagram of the physical situation makes your homework more useful as a stand-alone document that you can review without having to refer to the text. The diagram also helps you make connections between fundamental ideas and physical situations – often the first and critical step in solving a problem. See sample THW

The diagram may **NOT be an abstract mathematical diagram (like a vector diagram, graph, or free-body force vector diagram)**. It must be a diagram of the physical situation and therefore it must involve matter/energy and or fields being considered.

### **iii) Additional requirements for Conceptual Questions:**

If the question is conceptual, then give a complete explanation of your answer in the following way:

A) If appropriate, first give a short basic answer to the question like “yes” or “left” or “c)” (for multiple choice) or “increases”, or “that’s not possible” etc.

B) Then give an explanation and try to make an argument from fundamental laws or fundamental principles of physics.

In answering a question, try to **use reasoning that begins with fundamental laws or theorems / principles of physics**. Many people can answer a question and actually NOT understand the reasoning behind their own answers. Sometimes a question can be answered by using a proof by contradiction. Students often do not receive credit for Conceptual Questions because they fail to give a logical argument... instead they just given an answer that could be interpreted as a guess.

Your ability to answer qualitative questions is the “real” measure of your understanding. You may want to see if you can tell your explanation to a friend / parent / fellow student in order to gauge if your answer makes sense.

#### **iv) Additional requirements for Quantitative Problems:**

a) present the given information,

b) Establish coordinate system (+x, +y, and +z, and location of origin if needed) and identify any physical systems that principles are being applied to (for example: system can be just a book, or book and earth, or book earth and table,...)

c) Begin with fundamental laws / theorems or definitions.

d) write one equation under the other as you apply various physics principles or mathematical steps

e) put a box around your final answer for each part ( like a), b) , c) etc.. ) of the question.

Usually, at least a full ½ page column is needed for each problem There is a sample HW on my website so that you can see the allowed format. The work must be neat, in a dark pen or pencil, and relatively large so that it is easy to read.

If you have handwriting that is difficult to read then use printed letters.

#### **v) How to turn in THW and other Assignments:**

Assignments (THW, CO etc...) will be due at the beginning of lecture. You must submit it on my desk at the beginning of class (first 10 minutes) preferably before class announcements (announcements are given at the beginning of every class and are usually finished 1 to 2 minutes after official class starting time). Do not interrupt the instructor – just drop your work off at the desk.

If late to class: sign the late sheet and discretely drop the assignment off at my desk (near front of class) as soon as you enter the class (so that you get no advantage as HW problems may sometimes be discussed in class). “Discretely” means that you should not walk between a speaker and an audience as this is considered inappropriate.

#### **vi) Penalties for not turning THW or other assignments ontime**

**Any HW submitted after first 10 minutes, but before end of lecture, is worth a maximum of 70% credit.** Therefore If you think there is a possibility that you will be late, then scan your assignment and send it by email (before class starts) to insure that it is counted as ontime.

If there is an accident on the roads, or other avoidable mishap, then **document the incident** (with photo and live date for example) and offer that as evidence of an excusable lateness.

If you do not bring your assignment then you can receive 50 % credit if you email it to me by midnight (12pm) **You must then bring in the hard copy the following day with word “LATE” on top.**

If you are absent when an assignment is due (for example: you are sick but have no doctor’s note), or otherwise must be late, then you can scan the assignment (before start of lecture) by email

There are no penalties for classwork that is missed (including quizzes and midterms) if you have an excused absence (if you miss a quiz for example, then your average quiz score will be substituted for that quiz grade).

**HW submitted on a date after the due date will not be accepted.**

### **vii) Grading of HW**

Approximately 50 % the HWs will be collected and graded. 2 or 3 will be graded for content and the remainder will be graded for effort. You will not be told in advance which of the HWs will be graded. You do not have to copy the questions to get full credit but a **physical diagram is required** for each question / problem. (see above for required format). There is a 100 % penalty for any question or problem without a physical diagram.

HWs that are graded for content will receive 40% for overall effort and 60% for the content and effort of 2 to 4 specific questions / problems selected by the instructor. You will not be told which questions on each assignment will be graded however, so do all of them if you want a chance to receive full credit.

Conceptual Questions on the HW are usually more difficult for students (since they require “true” understanding) and will have greater weight compared to problems.

Make a serious effort in answering conceptual questions and get help if you can't answer. Put your name in the upper right side of the assignment.. **(An assignment or quiz without a name will lose 10 points automatically)**

Assignments must be stapled together in upper left square centimeter of the page (see website) in order to make reading of the assignment possible). **Unstapled HW or improperly stapled HW results in 10 points off.**

### **viii) Homework Excellence Final Course Grade Bonus**

Any student who submits every homework and get a 70 % score (or higher) on each textbook homework receives a **2.0 point** bonus on the final grade for the class. (score is 1.7 points if only one assignment is below 70 %). A student who averages over 75 % gets a **1.5 %** bonus on final grade for class. Students can get either 2 % bonus or 1.5 % bonus (not both)

### **H) Laboratory work (for lab classes only)**

You need a separate Laboratory composition-style notebook (just like your practice notebook). Laboratory experience is critical for any person entering a scientific or technical field. All lab reports should be written by each individual student even if the lab is done with other students. Lab reports will emphasize error analyses; an experiment without error analysis is essentially worthless. You will be taught how to do proper error analysis using a variety of techniques. Students must be ontime for lab. If you are late then you lose points proportionately for the time you are late. You are not allowed to receive credit for a lab if you are more than 30 minutes late.

Students are only allowed a certain number of latenesses and absences. (See below). Each lab that is missed results in a 5 % deduction of the grade of the lab part of the class and counts toward the total number of absences in the class.

For each lab you will have two sections: (this will be explained in lab)

a) Lab Notes/Skills Section (called section “0”)

Here you keep notes for the lab given by the instructor during the first 15 minutes of lab.

b) Lab Report Section

Here you will write a formal lab report including any or all of the following: introduction, theory, hypothesis, raw data, presentation of error of each raw data measurement, data analysis, graphs, error analysis, discrepancy, Presentation of result with error for calculated quantities, specific conclusion and any 1D graphs, and general reflection (see webpage for more lab report details). Your lab reports will be written in the lab and your lab notebooks will be graded. Lab notebooks stay in the lab. No extra time will be allowed to write the lab report; the report must be finished in class. Occasionally a problem is given as a supplement to lab work and is done in the lab notebook.

There will be 8-10 labs. 2 will be graded for content. 4 will be graded for effort. There are no makeup



labs. If you miss a lab that is graded for content, and it is excused (see below for definition of "excused"), then the instructor will choose the lab prior to the one being graded as a substitute lab to grade for you. If you miss a lab and it is not excused then your score for that lab is a zero.

Lab Final: you will be given a lab final on the last lab day.

Lab Quizzes may also be given and each counts as a small fraction (2 to 5 % per quiz) of the Lab Final part of the grade.

### **Grading of Lab part of class:**

The lab final/lab quizzes are worth 50 % of your overall lab grade. The 2 content-graded lab reports are 30%. The remaining labs are worth 20 %). You will not be told which labs will be graded for content.

### **I) Questions on Lecture (QL) assignments (only for physics 4D)**

You will be given a chart that indicates the days that you have to do your QLs (It's about 1 QL every 3 weeks).

#### **Format of the QL:**

a) At the top: indicate day and date of the lecture that you are doing your QL for (which is not the same as the date that you turn it in).

For example: If you had to do a QL for a lecture that occurred on a Thursday then you would turn that QL in on Friday (but the top of the QL would have Thursday's date). There is a 15 percent deduction if you leave out these 2 pieces of information since it will make grading difficult.

b) The work must be done in pen, and on regular 8.5 x 11 blank white paper (it must fit into my scanner). I will not accept work on paper having the wrong size since it must be able to be scanned in a printer. Divide your paper into two sections vertically. The left side should be 2/3 of the paper, and the right side 1/3 of the paper. Choose some aspect of the lecture that you have some concerns with or are simply interested in. On the left side copy the notes from lecture that you have a question about. On the right side put the question that you have. This is an excellent chance to show your interest and creativity.

I will answer the question (on your page) and email back the QL (with answer included) to you and to every other student. There will be two to four QL quizzes based on the QL material.

The QL's and my responses will be emailed to all students and will be helpful as part of a study guide. Sometimes I will review the QL's that are submitted at the beginning of lecture so you can expect that all students will see your QL work ! Students are expected to review the QLs online.

The QLs are a good chance for you to test your general understanding and to review.

### **Missing your QL date**

If you miss your QL date, then turn it in within a 3 class days and you can receive half credit

### **J) Attendance and Tardiness**

You are expected to be here at the beginning of each class, every day, for the rest of the quarter. If you must be absent then provide physical documentation to have the absence excused (see below).

You must sign the attendance sheet every day with your initials. This is required by the State of California.

If you miss more than 20 percent of a class, then you are considered absent, otherwise you are just considered late.

It is important to experience the discussion of physics with the instructor and classmates. Therefore there are penalties for being late or for unexcused absences.

### **Non-summer classes:** Points off of final course grade

1<sup>st</sup> lateness 0.2                      1<sup>st</sup> unexcused absence 1.0 points

Additional points off for each further lateness or unexcused absence

2 <sup>nd</sup> lateness	0.5	2 <sup>nd</sup> unexcused absence	1.0 points
3 <sup>rd</sup> lateness	0.5	3 <sup>rd</sup> unexcused absence	2.0 points
4 <sup>th</sup> lateness	1.0	4 <sup>th</sup> unexcused absence	2.0 points
5 <sup>th</sup> and more	2.0	5 <sup>th</sup> and more unexcused absence	3.0 points

**Summer classes:** Points off of final course grade

1 <sup>st</sup> lateness	0.2	1 <sup>st</sup> unexcused absence	2.0 points
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Additional points off for each further lateness or unexcused absence

2 <sup>nd</sup> lateness	0.5	2 <sup>nd</sup> unexcused absence	2.0 points
3 <sup>rd</sup> lateness	0.5	3 <sup>rd</sup> unexcused absence	3.0 points
4 <sup>th</sup> lateness	1.0	4 <sup>th</sup> unexcused absence	3.0 points
5 <sup>th</sup> and more	2.0	5 <sup>th</sup> and more unexcused absence	5.0 points

If you are unable to make it to class ontime, on a regular basis, then you probably would do better and be less frustrated in a class with less rigid attendance rules.

If you come very late (more then 2 mins late), then come to the front of the class, as soon as you walk in, and sign the late sheet

If there is an accident on the roads, then document with a photo and live date on your phone camera, and offer that as evidence of an excusable event.

### Some FAQs:

#### **Do I have to pick up my graded work that is given out at the beginning of class ?**

Check the front desk each day ! You are responsible for picking up your graded quiz / practice notebook / homework / outline at the beginning of each lecture period. **If you fail to pick up your graded work then you are marked absent and your score on that assignment is reduced 5%** (unless you have an excused absence). If you pick up your work at the end of class then you must sign the late sheet in order to get it.

#### **What should a student do if she/he is going to be or is late to class ?**

Take a photo and send an email if you are stuck in really bad traffic.

When you arrive to class do no interrupt the instructor. Discretely sign the late sheet, (don't walk in front of an instructor who is addressing a class) drop off any work that is due. Don't forget to pick up any work being returned to you.

#### **Do I need a doctor's note or equivalent for an excused absence ?**

Yes. And you must bring a physical copy of the note to class.

#### **Will I be dropped if I don't attend the first few classes ?**

If you miss the first and the second day of class then you will be dropped.

#### **Can I miss the final exam ?**

You cannot be absent for the final exam; you must take the final exam in order to pass the class.

#### **K) Waiting List and Adding into the class.**

If you are on the waitlist and/or not yet enrolled in the class, then your absences and tardies count for 50 % compared to students who are enrolled. Other penalties associated with not being present because of not being registered are also 50 % . (for example a missed quiz only counts for ½ of a zero grade and not a full zero quiz grade)

I will accept several students over the class limit up to the end of the second week.

### **L) Midterms**

There will be 2 midterms in this class. The midterms will consist of multiple choice questions as well as “free response” questions and problems. No calculators will be allowed in order to guarantee that everyone has an equal chance at the exam; learn to approximate answers using basic arithmetic. The lowest of your 2 midterm grades will be given 1/2 of the weight of the other midterm when calculating your midterm average.

Students will be allowed to earn back points for questions that were missed on the midterms by writing a “reflection” document. You will be told the specific format for the “reflection” document. Students can earn back up to 30 % on midterm 1 and 15 % on midterm 2.

There will not be make-up midterms. If you miss a midterm and it is unexcused (see below) then the score is a zero. If you miss a midterm and it is excused (see below), then the weighted average of your final exam (final with 2/3 weight) and other midterm score (1/3 weight) will be your score for the missed (excused) midterm. To pass the class you must take at least one of the midterms and the final exam.

If you are tardy for a quiz, midterm or final, you will not be given additional time.

No calculators will be allowed for any quiz, midterm or final. Calculators are allowed for the lab final.

### **M) Quizzes**

There will be 10 to 20 short quizzes (about 1.5 per week) in this class of about 5 minutes each at the start of class. Quizzes are usually announced but may not be. Quizzes emphasize material in the prior 3 days of class. There will not be make-up quizzes. If you miss a quiz and you are not excused (see below) then your score is a zero. If it is excused (see below) then the missed quiz grade will be the average of your other quiz grades. The lowest of your quiz grades will be given half the weight as the others.

#### **Quizzes without a name lose 10%.**

There may also be “book quizzes” where you will be asked to read a certain section and be quizzed on it for basic information even before the material is presented in class.

### **N) Final:**

The Final exam will be given as per the school calendar. There will be no make-up final. You may bring 2 sides of regular paper with notes and equations to the final exam. You must bring a photo ID to the final exam and show it to the instructor during the test if asked. If you are late to the final then you will NOT be given additional time. No calculator is allowed on the final. You are only allowed a single pencil/pen and a straight edge like a ruler.

If the class as a whole cannot take the final exam because of extraordinary circumstances (earthquake / power outage etc...and cannot be rescheduled), then your highest midterm grade, (without reflection points) will be used for your final exam grade

### **O) How work will be graded (HW, Quizzes and Tests)**

On homework, in-class quizzes, midterms and final, you must **show all your work** to receive full credit. You must show logical steps using laws / theorems or definitions. This includes qualitative questions – do not simply restate the question or leave out critical thinking steps. Usually work will be returned within one week. If you need to use material that you are submitting, then copy the work prior to submitting so you can use it even if I still have it.

Your work must be distinguishable from a student who guessed.

**Do not give more than one “answer”** as the grader will not choose the correct answer out of two

answers for you ! If you put down two answers, you automatically lose 75 %.

Solutions should show your step-by-step reasoning to obtain the solution. No credit will be given if no work is shown even if you obtain the correct answer to the problem (accidentally or not).

Usually you will solve the problems algebraically before “plugging in” numerical values... but sometimes it is worth it to plug in numbers for an intermediate step. Be certain to include the appropriate units with your answer and proper significant figures.

Note: If there is a dispute in the grading of any exam homework, quiz, or exam I will consider looking at it a second time only if it is handed back to me within 2 school days after I return it, and if there is a neatly written appeal. You cannot make an appeal immediately after a quiz is given back to you.

Save all of your graded work in case of any lost records of student grades.

### **P) Letter Grades for the course**

The calculated percentage will be rounded to the nearest whole number. Letter grades will be determined as follows:

A+: 97-99% A: 93-96% A-: 90-92%

B+: 87-89% B: 83-86% B-: 80-82%

C+: 77-79% C: 65-76%

C grades will be also be given to students between 60 and 64% if a 70 % average is obtained on the THW grade

C- grades cannot be given at Deanza

D: 55-64% F: 0-54%

The grading scale shown above is firm. Although unlikely, all tests and assignments may be curved, slightly. Being close to a grade does not entitle a student to that grade (89.4% is a "B+", 89.5 % is an A-).

Typically 15 % of students will get an A, 30 % will get a B, 35 % will get a C and the remainder will get a D or F grade.

### **Q) De Anza College Academic Integrity and Cheating Issues**

The following types of misconduct for which students are subject to disciplinary sanctions apply at all times on campus as well as to any off-campus functions sponsored or supervised by the college: cheating, plagiarism or knowingly furnishing false information in the classroom or to a college officer. Copying another student's work or problem solution, or copying from a “solution manual” both fall into the above categories and may result in disciplinary action. In addition to the above, a grade of zero points will be assigned to any work if a student has been found cheating on it.

If you are aware of cheating that is occurring, then send an anonymous letter to the instructor.

### **R) Things to do to give yourself a good chance of doing well.**

**I may send to you suggestions from previous students about how to do well in this class.**

Also, you should

a) Realize that physics is based on key principles that build upon each other, and the reasoning that follows from them. You cannot succeed by trying to memorize certain procedures or equations; it just won't work. So read the text and listen to lectures with this in mind. Keep asking yourself “ what is the fundamental idea here ?”

b) Review Lecture notes and regular HW assignments . It is extremely rare for a student to be able to do well in physics without doing assignments. Ask for help electronically if you don't understand lecture or any assignments.

c) Attend every class as it is difficult to learn physics without an interactive dialogue with an instructor who can help you understand the particular difficulties (conceptual or operational) that you are having. Learn your class notes well; the course emphasizes material covered in class especially on quizzes

d) Read the chapter before you come to class and take notes on things you don't understand

while reading.

e) Make sure that you have the necessary math background.

f) Do not allow yourself to fall behind as the situation will likely get progressively worse

g) Ask questions in class when you don't understand and take advantage of any office hours that are set up

h) Plan your schedule so that you have enough time to do the class. Consider reducing your work hours or number of classes.

i) Take advantage of the well organized Math / Science Tutorial Center, EOPS, and the Student success and retention program.

j) Work with other students so you can share their insights. Be mindful however of the plagiarism and cheating (see above).

k) talk to another student who has taken any of my classes

### **S) Other Resources**

You may choose to look at these other texts which cover the same material. You'll need to look at calculus based texts however.

Alternate Texts:

Knight, Physics for Scientists and Engineers

Giancoli, Physics

Hewitt, Conceptual Physics

Holt (Publisher), Physics

Feynman Lectures on Physics

Khan Academy videos

Walter Lewin video lectures and other online lectures

And many more....

### **T) Excused Absences:**

A class, lab, or test is excused if

a) you inform the instructor before the next class of the class AND

b) you have a doctor's note, a legal notice, a death in the family, or other documentation of "extraordinary circumstances" (to be judged by the instructor).

### **What is an extraordinary circumstance ?**

An extraordinary circumstance would be an absence that you must take because otherwise it would cause a great or irreversible hardship. The instructor determines when an excused absence is considered an "extraordinary circumstance". A wedding or a car accident would be examples of extraordinary circumstances.

### **What do if you have an excused absence / excused lateness**

If you are excused from class, that does not excuse you from turning in work that is due that day in class (unless the excused absence prevented you from doing the work.. like a medical procedure... but not like a wedding)

### **Making up the missed work**

You have 3 days from the end of the excused absence to make up the work

**Student Learning Outcome(s):**

\*Critically examine new, previously un-encountered problems, analyzing and evaluating their constituent parts, to construct and explain a logical solution utilizing, and based upon, the fundamental laws of waves, fluids, optics, and thermodynamics.

\*Gain confidence in taking precise and accurate scientific measurements, with their uncertainties, and then with calculations from them, analyze their meaning as relative, in an experimental context, to the verification and support of physics theories.