

A) General information

Physics 4C Winter 2015

Instructor: Ronald Francis

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Homepage: <http://nebula.deanza.edu:16080/~ronald/>

Office: E34A

Office Hours in S43 (tutorial center). I will sit in the tutorial center and make my self available at the times indicated below.

Monday 1:30 – 2:15

Tuesday 1:30 – 2:00

Wednesday 1:30 – 2:15, 10:00 pm to 10:30 pm online

Thursday 1:30 – 2:00

Friday 12:00 – 12:30, and 1:30 – 2:00

Students can also email me any time (usually evening works well). I'll often respond within an hour and a half or so

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

Deanza college has excellent tutoring services and I highly recommend that every get regular tutoring. 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.

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 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 unfamiliar will be explained.

Class length and times

Lecture Hours: MTWThF 12:30 – 1:20

Lab (Tuesday) 9:30 to 12:2)

Lab (Thursday) 9:30 to 12:20

Textbook and pre-requisites

If you are unable to purchase a textbook, then you should know that it is possible to do the class without buying the textbook. Most students will benefit from reading some textbook to reinforce ideas introduced in class. Any text is sufficient.

The official class textbook is: Serway and Jewett 8th edition Volume 2:
Physics for Scientists and Engineers.

A copy should be on reserve at the library. You can use an earlier edition if you want to... but you must do the problems from the current edition and it is your responsibility to get the correct problems

HW Questions and Problems will come from the official class text.

Prerequisites:**Physics 4A (recommended Physics 4B)**

Mathematics 1B. Students must be taking Mathematics 1C concurrently or else have completed 1C

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

- 1) There will usually be 1 quiz every week at the beginning of class approximately 10 minutes long. Quizzes will be on material covered in previous one or two lectures. 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 - counts for one absence and only 4 absences are allowed. Students will be dropped from the class if they any combination of absences and tardies that add up to 4 absences. See attendance below.
- 3) Save all of your quizzes, essays, exams etc... so that you have a record of the grade.
- 4) Record all of your grades in a single spot so that you can always calculate your “current” grade at anytime in the course.

Exam dates:

Please reserve these dates; there are no make-ups

Midterm #1: Wednesday Jan 28th

Midterm #2: Wednesday Feb 25th (Withdrawal date is Friday 27th)

Final Exam : See school calendar. Reserve the Final Exam Date NOW ! No make-up finals or alternative dates will be allowed

Other important dates:

Students should see their own personal “My Portal” webpage for important dates like 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)

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)

Students who do not withdraw on or before this date must receive a letter grade, but cannot receive a “W”. Students should evaluate their class status before this date – if you are not doing well, neither you nor I will be able to withdraw after this deadline and it is most likely they will receive a poor or failing grade. Withdrawing from a class is the responsibility of the student and you must do it before the deadline.

B) Course Goals:

Students should be able to

- a) identify and use key ideas to answer conceptual questions in introductory mechanics
- b) systematically use fundamental equations that are useful in solving problems in these areas.

Description of the course

The class will consist of lectures, and 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 ½ of the problems on the quizzes and midterms will involve material that was discussed in class in detail.**

It is important to review notes nightly identify items that you do not understand. Usually you might do this using a different color (than usual notes) and figure out a way to resolve these issues. (Get help from someone including possibly the instructor)

If you do not know 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 the textbook problems is only part of being prepared. **Students should be able to do any proofs or derivations, from fundamental equations, done in the text or in class.**

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 calculate your own “current” grade using the chart below.

Final:	30 %
Midterms (2 x 11%)	22%
Quizzes	17 %
Labs	15 %
Practice Notebook	6 %
Question on Lecture	2 %
Chapter Outlines	3 %
HW for Effort	3 % (+ 2.0 % or 1.5 % if you receive the HW bonus)
HW for Content	2 %

D) Materials Needed

1 composition style notebooks

Straight Edge, Calculator (Calculators are not allowed on any quizzes. They can be used on HW, midterm, final and lab work).

Also helpful are Protractor, Circle Template, Regular white copy paper for doing problems.

A loose-leaf notebook is very much recommended, but not required, to help organize homework handouts, lecture notes, etc. 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 that I will probably not see too often).

E) Homework

It is critical to do all of your HW. The attention you give to the homework assignments is crucial to your success in this course. Doing physics is a skill that you develop, and practicing the skill is necessary.

i) Hand Written Chapter Outlines:

You are required to do a three page chapter outline for each chapter and submit it when it is due. You can use lined (ruled) paper for this if you choose but I do not recommend it. Blank white paper is preferred.

ii) Textbook Questions and problems: (see assignment calendar on website)

In each chapter you will be given approximately 10 Qualitative Conceptual Questions and 10-15 Quantitative Calculation Questions (Problems) from the text requiring a mathematical solution. Qualitative questions are as important if not more important than quantitative “calculation” questions. See assignment calendar for the weekly textbook HW assignment.

Your work must be your own. You may consult with students after you have made an attempt to do HW problems on your own. You may not copy another person’s HW. Instead, contact them for help, and then do your own work. If your HW has been obviously copied from another person’s HW 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 answers to the HW problems are in the back of the text, and we will reserve some time to go over HW Problems in class. You are encouraged to email me for help on the HW.

iii) Format of HW (conceptual questions AND quantitative problems)

a) Questions are to be done on **BLANK white copy paper (no ruled lines on the paper)** and must be done in the following format:

b) **Each question / problem must be accompanied by a well-labeled physical diagram. HW without a rough diagram for each question will not be accepted and the HW score for that question or problem will be a zero.** Very infrequently there may be a question that makes no physical reference (question does not mention any material object like a sled, dog, book, person, table, rocket etc...). In those cases you do not need a diagram .. just write “No physical object”.

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 HW

The diagram may **NOT be a mathematical diagram (like a vector or free-body force vector diagram)**. It must be a diagram of the physical situation of objects/fields being considered.

iv) Additional requirements for Conceptual Questions:

If the question is conceptual, then give a complete explanation of your answer. You cannot just give an answer with no explanation and no physical reasoning (from basic principles) demonstrated. You can’t just write “left” or “always” or “no” etc... **There must be evidence that you did not simply make a guess.**

v) Additional requirements for Quantitative Problems:

- present the given information,
- Establish coordinate system (+x, +y, and +z as needed, and location of origin)
- write one equation under the other as you apply physics principles and
- put a box around your final answer to each part of the question.

Usually a full ½ page column is needed for each problem. If you like, you can work in two columns to save paper. There is a sample HW on my website so that you can see one good and preferred format. You may use another format however.

The work must be neat, in a dark pen or pencil, and relatively large so that it is easy to read.

vi) How to turn in HW:

HW (either outlines or regular assignment) will be due at the beginning of lecture class. You must submit it on my desk at the beginning of class prior the finish of class announcements (announcements are given at the beginning of every class and are usually finished 2 minutes after official class starting time).

Late to class: If you are late to class then it is your responsibility to discretely drop the HW on the HW 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).

vii) Penalties for not turning HW on time

Any HW submitted after class announcements, but before end of lecture is worth a maximum of 50 % credit. Therefore If you think there is a possibility that you will be late, then scan your HW and send it by email (before class starts) if you want a chance to receive 100% credit.

If you forget to bring your HW and you tell me in class then you can receive 50 % credit if you email it to me by 9:00 pm. You must then bring in the hard copy the following day with word "LATE" on top.

If you are absent when HW is due (for example: you are sick but have no doctor's note), or must be late, then you can scan the HW (before start of lecture) by email or submit your HW to me by U.S. mail postmarked before the due time (in order to receive full credit) US mail: Ronald Francis, Deanza College, 21250 Stevens Creek Blvd. ▪ Cupertino, CA 95014

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

viii) Grading of HW

Approximately 50 % the HWs will be graded. 2 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)

HWs that are graded for content will receive 40% for effort (number of completed problems with diagrams out of the full assignment) and 60% for the content and effort of 2 to 4 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 to receive full credit.

Conceptual Questions on the HW are usually more difficult for students and will have equal or greater weight to problems, and require an explanation based on physics principles or definitions.

Usually Conceptual Questions are more difficult for students so make a serious effort in answering. Get help if you can't answer. Your answer must refer back to fundamental physics principles or definitions.

Put your name in the upper right of the HW. **(A HW or Quiz without a name will lose 15 points automatically)**

ix) Homework Excellence Final Course Grade Bonus

Any student who submits every homework and get a 70 % score (or higher) on each homework receives a **2.0 point** bonus on the final grade for the class. 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)

F) Laboratory work

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.

For each lab you will have two sections::

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. 2 will be graded for effort. There are no make-up labs.

If you miss a lab that is graded, 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.

In no circumstance can a student be excused from 2 labs. If you miss 2 or more labs then you cannot pass the class (department policy) and may be dropped from the class; lab work is a necessary experience to learn and appreciate physics.

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 4 graded lab reports are 50 % (15, 15, 10, 10). You will not be told which 4 labs will be graded.

G) Practice (PR) and Questions on Lecture (QL) assignments

Practice (PR) assignments

These notebooks are separate from the lecture notes that you should take (your lecture notebook can be any style that you like).

a) Practice (PR) Notebook

Each student will have a separate Practice notebook. The composition-style notebook cannot have any ruled lines in it – it must consist of blank white paper. **Practice assignments must be**

numbered, dated, and start at the top of a page. Practice assignments will be given in class and also by email (to be done at home).

Check your email for Practice assignments to be done at home. You will be given at least two days of notice for Practice assignment to be done at home. You will be told in class of any upcoming Practice assignments need to be done at home.

Your Practice notebook must be kept neat. There is a 20 % deduction on Practice assignments that are messy or falling out of the notebook or not stapled in neatly if necessary.

Questions on Lecture (QL) assignments

The class will be divided into several QL groups, and each group is responsible for submitting a QL on particular days:

Odd Mondays: 1st, 3rd, 5th, 7th, and 9th Monday lecture
Even Monday: 2nd, 4th, 6th, 8th and 10th Monday lecture
Odd Tuesdays: 1st, 3rd, 5th, 7th, and 9th Tuesday lecture
Etc.

For example: If you are in the Odd Thursday QL group, then you must submit a QL regarding lectures that take place on the odd Thursdays. Submit the work on the next class day.

In the event of Holidays or midterms, then use the following day's' lecture for your QL.

For example: If you in the Even Wednesday QL group and a midterm is scheduled for that day, then you will do a QL for Thursday (instead of Wednesday)

Another example: If you are in the Odd Friday QL group but there was no school on Friday (due to holiday or instructor's absence), then use the Monday's lecture for your QL

Format of the QL:

a) At the top: indicate which QL group you are in

b) The work must be done in pen, and on regular 8.5 x 11 blank white paper (it must fit into my scanner). 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.

I will answer the question (on your page) and email back the QL (with answer) to you and to every other student.

There will be two to four 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 before beginning the next lecture so you can expect that all students will see your QL work ! Students are expected to review the QLs online

H) 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).

If you are unable to make it to class ontime, on a regular basis, then you probably would do much better in another class.

Attendance will be recorded on most days but not every day.

A "sign in" sheet (on a clipboard) will sometimes be used to keep track of attendance. If you come late then it is your responsibility to sign the "sign in" sheet at the end of class.

Quizzes will be used to keep track of attendance.

Picking up graded quizzes will be used to keep track of attendance. (you are allowed to pick up only your own quiz)

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 work then your score is reduced 15% for each day that you fail to pick it up** (unless you have an excused absence) and you will be marked as late.

What should a student do if she/he is late to class ?

Do not interrupt the instructor. Discretely drop off any work that is due at the small desk at the front of the class. Pick up your papers at the end of class (your paper will be in the red "pick up" folder) Sign the "sign in" sheet so that you can get credit for attending at least 80 % of the class. If you are more than 20 minutes late then you cannot receive credit for attendance.

You must be present for 80% of a class to be given credit for attending (you cannot leave early and still receive credit for attending).

If you have more than 4 absences, prior to the withdrawal date, you may find yourself dropped from the class. However, it is your responsibility to ensure being dropped or withdrawn from the course in order to avoid an "F" in the course if you stop attending lecture or lab.

If you miss the first and the second day of class then you will be dropped. If you miss 2 of the first 5 classes, then you will be dropped. If you miss 3 of the first 9 days of class then you will be dropped. You cannot be absent for the final exam and you must take the final exam in order to pass the class.

I) 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 % . (missed quiz for example only counts for 1/2 of a zero and not a full zero).

I will accept 3 students over the class limit up to the end of the second week. Please note that usually 3 to 5 students will drop the class during the first two weeks.

J) Midterm

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 midterms grades will be given half the weight of the others when calculating your midterm average.

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 scores (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 an exam you will not be given additional time.

No calculators will be allowed for any quiz or exam or final. Calculators maybe allowed for sections of the lab final.

K) Quizzes

There will be approximately 10 short quizzes (about 1 per week) in this class of about 10-15 minutes each at the start of class. Quizzes are usually announced but may not be. Quizzes emphasize material in the prior two 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 15%.

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.

L) 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 pencil/pen and a straight edge like a ruler.

If the final exam cannot be taken because of extraordinary circumstances (earthquake / power outage etc...and cannot be rescheduled), then your highest midterm grade will be used for final exam grade

M) 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. This includes qualitative questions – do not simply restate the question or leave out critical thinking steps.

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, logical process used 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.

N) 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 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-).

O) 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.

O) Things to do to give yourself a good chance of doing well

- a) Make sure that you have the necessary math background.
- b) Make time to do the homework. It is extremely rare for a student to be able to do well in physics without putting in practice time with the HW.
- 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) 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.
- 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.
- 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).

P) 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

Q) Definition of Excused Absence:

A class, lab, or test is excused if

- a) you inform the instructor before 8am of the day 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). Please note that the acceptance of

the documentation is at the discretion of the instructor. The general rule for acceptance would be that the act of coming to class would have caused a great or irreversible hardship to the student.