Physical Reasoning and Calculation (PHYS 1)
Mon, Wed 11:00 – 11:50 (SQU 443)

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Office Hours: Tues/Thurs 10:00 – 11:00
And by Appointment

Course Summary

Introduction to the analytical skills needed for the study of Physics. Emphasis is on reasoning and problem-solving, including conceptualization, visualization, and interpretation of written descriptions of physical situations, and on the connection of physical laws to the mathematical techniques used in their solution. There are no formal prerequisites for the course, but use of mathematics at the level of college algebra and trigonometry will be extensive.

Subject Matter

Scientific Notation and Significant Figures
Units and Conversions
Problem Solving (i.e. dreaded word problems)
Graphs – Interpreting and Creating
Coordinate Systems
Motion along a Line
Vectors
Motion in Multiple Directions

Required Texts / Materials

All needed printed materials will be provided via SacCT, Sac State's Course Management System (formerly WebCT). Please make sure you are familiar with its use, it is available at https://online.csus.edu. If you've never used it before, please follow the link on the page to the student resources page. You must have a Saclink account to use SacCT, if you don't have one, get one ASAP (note: this should only be the case for those who are Open University students – regular students use Saclink accounts to register for classes).

You will need to have a scientific calculator, but it need not be fancy. If it has trigonometric functions, you're good to go. Such a calculator should be sufficient for all of your Physics 5 and/or 11 needs. The Texas Instruments, TI-30 is a fine one that only runs about $10.

Recommended Texts: The Bookstore has algebra and trigonometry "Crash Course" books reserved for this course in the stacks. They are from the Schaum's Outline Series. If you no longer have either algebra or trig books on your shelf – you might find them useful.

If you have trouble remembering your algebra and trigonometry formulas (who doesn't), consider picking up a mathematical handbook that covers this material. A good one (I've worn the cover off of mine) is the

"Mathematical Handbook of Formulas and Tables" by Murray R. Spiegel. This is part of the Schaum's Outline Series.

Modus Operandi

I want this class to have a discussion feel to it. To really understand the material, you need to be actively engaged as we cover it. Most days, I will start with a brief lecture on the subject that we are going to cover. My hope is that it will last for no more than 15 minutes and that we will then go into solving problems. Sometimes the problems will be me working through them on the board, other times students will work problems at the board. I might even have you break into groups to work on problems. Bring a calculator to class to help out with the calculations that we'll do in class.

Tentative Schedule

Week	Monday	Wednesday
#1	8/31 SI / Units	9/2 Scientific Notation
#2	9/7 Labor Day	9/9 Conversions
#3	9/14 Sig Figs	9/16 Problem Solving: Algebra Linear
#4	9/21 Problem Solving: Algebra Linear	9/23 Problem Solving: Algebra Quadratic
#5	9/28 Problem Solving: Algebra Quadratic	9/30 Problem Solving: Ratios
#6	10/5 Problem Solving: Ratios	10/7 Problem Solving: Trig
#7	10/12 Problem Solving Trig	10/14 Exam 1 (SI/Units/Alg/Ratios)
#8	10/19 Coordinate Systems	10/21 Coordinate Systems
#9	10/26 Graphs	10/28 Graphs
#10	11/2 1D Motion	11/4 1D Motion
#11	11/9 Vectors	11/11 Veterans Day
#12	11/16 Vectors	11/18 Exam 2 (Trig, Coords, Graphs, 1D Motion)
#13 Thanksgiving Week	11/23 FURLOUGH DAY	11/25 FURLOUGH DAY
#14	11/30 2D Motion	12/2 2D Motion
#15	12/7 2D Motion	12/9 Review

Grading

Homework   20%

    There will be weekly homework assignments to reinforce the material that we cover in class. Assignments will be made available online before the start of the week on SacCT. The assignments are generally due the lecture following the completion of each section, the exact dates are posted on the SacCT calendar. Solutions will be posted in SacCT at 11:00 AM two days after the homework is due. Homework will not be accepted after the solutions are posted. You will be given five free (no penalty) late days. Once you have used up all five days, late assignments will not be accepted. It will be considered late if it is submitted after the end of class, late homework may be turned in to me in person or via my drop box on the second floor of Sequoia Hall.

    Each homework assignment is worth 10 points. Homework will be graded on accuracy and effort, each part is worth five points. Your lowest homework assignment will be thrown out.

    If you receive help from classmates, you must report their names on your paper. Failure to do so will be considered a violation of the campus academic dishonesty policy (see below).

Quizzes   15%

    There will be periodic quizzes on the material covered in the course, probably about a half dozen. The quizzes will happen in the last 20 minutes of class. Each quiz is worth 5 points. Notes are not allowed. Quizzes, when they are given, will be at the end of the week. There will be no opportunity to make up these quizzes. The lowest quiz will be dropped.

Participation   10%

    Because this is a discussion course, you must participate in class discussions (i.e. working through problems, answering questions, asking questions, etc.). It is crucial to attend class to get these points.

Midterm Exams   15% Each

    There will be two midterm exams, tentatively scheduled for October 12 and November 18. If these dates need to change, you will be given at least one weeks notice. The exams will be closed book and closed notes. You are allowed a scientific calculator, but nothing may be programmed on it, I reserve the right to clear the memory of your calculator prior to or during the exams. No PDA or Phone based calculators are allowed. If there are any tricky equations to remember, I'll give them to you on the exam.

Final Exam   25%

<u>Wednesday December 16 @ 10:15 AM</u>. Same rules as the midterm exams, but you do have two hours to complete the exam. It is comprehensive but the material will be somewhat weighted towards the material covered after Exam 2.

I intend to use standard percentages in assigning grades: A = 90-100%; B = 80-90%, etc. However, I will take into consideration the distribution of scores prior to making a final decision.

Academic Dishonesty Statement

The Department of Physics and Astronomy has unanimously approved the following statement:

"The faculty of the Department of Physics and Astronomy will not tolerate academic dishonesty. Falsification of data, copying, unauthorized collaboration, plagiarism, alteration of graded materials, or other actions (as described in, but not necessarily limited to the Sacramento State Policy Manual) *will be promptly reported to the Office of Student Affairs*. The offending student will be penalized on the assignment in question. Serious infractions will result in course failure and a recommendation for administrative sanctions."

If you have any questions regarding this statement, please come and speak with me about it.

Additional Information

If you have a disability and require accommodations, you need to provide disability documentation to SSWD, Lassen Hall 1008, 916-278-6955. Please discuss your accommodation needs with me after class or during my office hours early in the semester.