

Advanced Modern Physics (PHYS 151)  
Riverside 1006  
Tu/Th 1:30 – 2:45

Dr. William DeGraffenreid  
Office: Sequoia 434 Phone: (916) 278-5938  
E-mail: [degraff@csus.edu](mailto:degraff@csus.edu)  
WWW: <http://www.csus.edu/indiv/D/DegraffenreidW>  
Office Hours: Tuesdays 3:00 – 4:00  
Wednesdays 1:00 – 2:00  
and by appointment

### Course Summary

Advanced Modern Physics is the continuation of Physics 150, Quantum Mechanics. We will cover time dependent perturbation theory, variational methods, atomic and molecular structure, spectroscopy, laser theory, and elementary particles. Physics 150 is the prerequisite for the course.

### Required Texts

W. Demtröder, “An Introduction to Atomic- Molecular- and Quantum Physics.” Springer Verlag (ISBN: 3-540-20631-01).

D. Griffiths, “Introduction to Quantum Mechanics.” Prentice Hall (ISBN: 0-13-111892-7).  
This text was used in 150 and isn't in the bookstore.

### Grading

Homework 15%

Homework will be regularly assigned. The due dates will be given with each assignment. Some problems will be out of the textbooks, others will be from me. Each set will consist of about a half dozen problems. After collected, detailed solutions will be posted on my website. As such, I will leave it to you to check the details of your work. I will be grading homework on a three point scale: 2 points – well attempted; 1 point – marginal, effort; 0 points – I'm not happy. You are welcome to work together on assignments, however if it becomes obvious that someone is just copying the work of others (classmates or other sources), I will enforce the department's academic dishonesty policy (see below).

Midterm Exams

25% Each

Two midterm exams. Dates of the exams will be announced two weeks ahead of time. You will be allowed one side of an 8.5" x 11" sheet of paper on each midterm.

Final Exam

35%

Two hour-long final. Because of the importance of some of the material introduced after the second midterm exam, two thirds of the points on this exam will be from these topics. The final is scheduled for 1:30 PM on Thursday, May 24. Both sides of a single 8.5" x 11" sheet of paper are allowed.

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.