Chemistry 364: Spring 2001
Physical Chemistry II

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Class Meetings: MWF 10 am
Science 2024

Lab Instructor: Earle Adams
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Laboratory: W 1:15 p.m.
Science 2202

Texts:
Physical Chemistry: A Molecular Approach by McQuarrie and Simon.
Applied Mathematics for Physical Chemistry by James Barrante. (optional)

These are available at the bookstore. In addition the Barrante book is on reserve in the Science Library. This book is recommended for students who feel they need a refresher in the required mathematics. It is not a mathematics textbook, rather it serves as a review of mathematics which is commonly encountered in the physical chemistry course. In addition you can find mathematics review chapters interspersed within your textbook.

Web Page:
The course web page is located at: www.grinnell.edu/courses/chm/S01/chm364-01/
You can also link to it from my page (chemistry department) and the library page. The web page contains copies of assignments, handouts, lecture summaries.

Course Philosophy:

This course is the second semester of a year long sequence in physical chemistry. This semester we will be studying the topic of quantum mechanics with applications in computational chemistry and spectroscopy. We will initially spend a few weeks developing the principles of quantum mechanics for small atoms and molecules. Then we will look at the application of quantum mechanics in chemistry. The first part of the laboratory portion of this course will deal more with experimental design and skills development; the latter will deal with the in-class material. During the first part of the course while we are developing the principles of quantum mechanics, labs will be methodology based. In the latter part of the course we will begin to apply our knowledge in the lab.

Examinations:

There will be 3 in class examinations, and a cumulative final examination. The final examination is scheduled for Wednesday May 16, 9 am. The in-class exams may also include 1-2 take home problems. All exams may include multiple choice problems and the final exam will include problems from the ACS standardized examination for physical chemistry.
Problem Sets:
Weekly problem sets (due on Fridays) will be collected and graded. Answers will be posted. Problem sets will be distributed on Friday and due the following Friday, except in exam weeks (see schedule). Problem solving is a necessary part of learning physical chemistry, both for familiarization with the material and as a reflection of the quantitative nature of the subject. A large number of problems can be found at the end of every chapter, and will make up the majority of the problems on the problem sets. Computers provide a tool for rapid data analysis and enhanced problem solving skills, specifically programs like Excel and Mathcad, and you are encouraged to work with one another and to employ computer analysis where appropriate when solving problems.

Help:

I am available to meet with you for individual help whenever you feel you need it. Appointments are generally available within 24 hours and I am occasionally free for drop in visits.

Grading:

Grading will be out of a scale of 1000 points with 3 exams (400) Final Exam(200) Lab (250), 10 Problem Sets at 15 points each (150).

A general guideline of points required per grade.

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<th>Points</th>
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<tr>
<td>850-1000</td>
<td>A</td>
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<td>700-850</td>
<td>B</td>
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<td>600-700</td>
<td>C</td>
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<td>500-600</td>
<td>D</td>
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Laboratory:

The laboratory for this class meets weekly on Wednesday. Labs have been chosen to complement the material in lecture and also to illustrate important experimental techniques. Laboratory procedures will be handed out prior to the lab. You are expected to keep a clear well organized laboratory notebook. Labs will be generally be done in groups. A focus of the laboratory this semester will be on scientific writing. To facilitate this you are expected to consult the ACS Style Guide. You will do several formal written lab reports in the style of a scientific paper. You will also be expected to present a poster on one of the laboratories.