

CHEM 182: Physical Chemistry II

Course Syllabus

PREREQUISITE:

CHEM 181

TEXT

“Physical Chemistry” by Peter Atkins, 7th edition (required)
Solutions Manual and Study Guide (recommended)

MathCAD 11 Software; or equivalent (required). Note: you can purchase MathCAD 11 from Chem. Stores for \$20.

CONTENT

Ch. 11	Quantum Theory (Introduction and Mathematical Framework) Review of Classical Mechanics Introduction Quantum Theory
Ch. 12	Applications 1-D Problems Particle-in-a-box Harmonic Oscillator (Vibrational Motion) 2D and 3D Problems (Angular Momentum) Particle-on-a-ring (Rotation in two dimensions) Particle-on-a-sphere (Rotation in three dimensions) Spin
Ch. 13	Atomic Structure and Atomic Spectra Hydrogen Atom Many Electron Atoms
Ch. 14	Molecular Structure Valence Bond Theory Molecular Orbital Theory
Ch. 16 & 17	Spectroscopy Rotational Vibrational Electronic
Ch. 19 & 20	Statistical Mechanics

HOMEWORK

Problems will be assigned periodically during the course. Homework assignments will not be collected. However, you will not learn the material (and hence do well on quizzes and exams) without working problems.

Some problems will require that you use mathematical software (e.g. MathCAD or Mathematica). These problems may be collected, and will be incorporated into your quiz grade.

A solutions manual is available in the Book Store. Use it sparingly, since it can be your worst enemy! I strongly urge you to spend at least 30-45 min on a problem before consulting the manual.

EXAMINATIONS

Quizzes: will be given periodically during the course. They will be announced at least one lecture in advance. (For example, a quiz announced on Tuesday (via email) could be given on Friday).

Midterm Exams: There will be 3 midterms. The dates will be announced at least two weeks in advance.

Final Exam: There will be a cumulative final exam.

GRADING

Your grade will be computed from three major components: weekly quizzes and computer projects (30%), three midterm exams (35%), and a final exam (35%). You will be allowed to drop your lowest quiz grade. You may also substitute your overall quiz grade for your lowest midterm grade.

No make-up exams (or quizzes) will be given unless you have **prior** approval from the instructor (that would be me). If you miss an exam (or quiz) without a valid (written) excuse you will receive a score of zero. With a valid excuse, your final grade will be computed based on the appropriate reduced total score. For example, if the total number of possible quiz “points” is 100 and you miss a 10 point quiz, your quiz grade will be based on total possible score of 90 (instead of 100).

Valid excuses include sickness and family emergencies. Participation in sports events is also a valid excuse. You *must* notify me *two weeks* prior to the event and you can take the exam (or quiz) *on an alternate day*.

Policy adopted by the faculty of the Department of Chemistry on
September 9, 1977,

“Since all graded work (including homework to be collected, quizzes, papers, mid-term examinations, final examinations, research proposals, laboratory results and reports, etc.) may be used in the determination of academic progress, no collaboration on this work is permitted unless the instructor explicitly indicates that some specific degree of collaboration is allowed. This statement is not intended to discourage students from studying together or working together on assignments which are not to be collected.