

Chemistry 322 - Physical Chemistry Spring Semester 2007

Professor: Clifford LeMaster (clemast@tce.boisestate.edu)

Required Texts:

D. A. McQuarrie, Quantum Chemistry, University Science Books
D. A. McQuarrie, Quantum Chemistry Solutions Manual, University Science Books
P. A. Rock, Chemical Thermodynamics, University Science Books
M. J. Pilling, Reaction Kinetics, Oxford Science Publications

Recommended Texts:

Zwillinger CRC Standard Mathematical Tables & Formulae
D. A. McQuarrie Mathematical Methods For Scientists & Engineers, University Science Books.
Foresman, B.; Frisch, Aileen; Exploring Chemistry with Electronic Structure Methods, 2nd ed.;
Gaussian Inc.: Pittsburg PA, 1996

Electronic: You are expected to have a BSU email address and check email at least three times a week. Course information will also be available at the Blackboard site for this course. You will also need an account to run Gaussian calculations available from Sean in the Computer Learning Center.

Course Content: Chapter 11, in McQuarrie. Specific content in Rock and Pilling to be announced in class.

Assessment of Student Performance: The student's proficiency with the course material will be assessed by quizzes/in-class work, and written/oral examinations.

Homework/Quizzes/In-Class Work/Attendance: Most every lecture will have in-class group and/or individual work/presentations. All work will be completed during the period. It is important, then, that participants be *participants* in the full sense of that word, coming to meetings prepared, willing to share their individual responses, eager to exchange (with civility) varied ideas, comfortable doing and presenting material. No homework/quizzes/in-class work is accepted after the class that it was assigned (no late turn in). This work is twenty percent (20%) of the course grade.

About Exams: Examination dates and times are fixed, and will not change – do not ask for an exception. Oral examinations will be conducted during the assigned week for the examination and appointments outside of normal class time will be required. Note that one exam (not the final) is automatically dropped before calculating the overall course grade so that missing one exam will not affect your grade. The exams will have a 50-minute time limit and the final (comprehensive but may exclude McQuarrie) two hours. You can think of knowledge as having units – knowledge per unit time. It is not only important that you have the knowledge but also that you are proficient in using it. A music analogy is that while one could play a Mozart piano sonata one note at a time, this is not useful.

Missed Exams and/or Homework/Quizzes/In-Class Work: There will be no make-up of exams or other assigned work under any circumstances – do not ask for an exception. A missed exam or other work will be considered a failing grade. All students will take the final. It is not optional.

Examinations: Three examinations are tentatively scheduled to be given during lecture hours (except oral exams) on Tuesday February 5, Thursday March 15, and Thursday April 19. The final examination will be comprehensive and will be from 8:00am to 10:00pm on Thursday, May 10. There will be no early, late, or make-up exams given. If you miss an exam that exam will receive zero credit.

Grading: The three midterms are worth a total of 45% and the final 35% of the course grade. Homework/quizzes/in-class work/attendance are worth 20%. The lowest midterm score will be dropped. If the score on the final is higher than the average of the best two of the three midterms (and the student has completed a minimum of 2 of the 3 midterms and 80% of the assigned Homework/quizzes/in-class work/attendance) that score will automatically be used for the course grade calculation in place of the midterm contribution. Note Homework/quizzes/in-class work/attendance scores are always included in the calculation.

Office Hours: Tuesday 10:30 – 11:30am, Wednesday 10:30 – 11:30am, in Room 340 Chemistry. Please note that prior arrangements are recommended to meet outside of these hours.

Learning Goals: The primary learning objective for this course is to use the tools of physics and mathematics to solve chemistry related problems. In addition, proficiency in the content areas of quantum mechanics, thermodynamics, and kinetics is needed to solve problems of a quantified nature. Finally, the relationship of theory to practice will be explored so that as a scientist you can articulate the importance and relevance of chemistry to the general public.