CHEM 547 SPRING 2013—SYLLABUS

COURSE DESCRIPTION: Advanced Instrumental Analysis I, 3 semester hours

CLASS TIME AND LOCATION: Lecture: MW 12:30pm-1:45pm; SCI 356.

INSTRUCTOR: Dr. Laurence Angel; Science 341
Telephone: 5391 Email: Laurence.Angel@tamuc.edu

OFFICE HOURS: Mon/Tue/Wed/Thurs/Fri: 4:00-5:00pm or by appointment. Messages can be left in the mailbox in the Department office.

STUDENT LEARNING OUTCOMES: Students will gain knowledge of chemical kinetics, quantum chemistry and surface chemistry, with the emphasis on reaction rate and order, activation energy, steady state hypothesis, Schrodinger equation, the application of quantum mechanics in chemical bonds and photoelectron spectroscopy, adsorption, and Langmuir isotherm. Students will convey their knowledge through tests and class problem solving sessions with the instructor. Studying and understanding the concepts and developing problem solving skills are keys to success in the class.

COURSE REQUIREMENTS, ASSIGNMENTS AND GRADING:

Textbook: Physical Chemistry: A Guided Inquiry, Thermodynamics
by Spencer, Moog and Farrell; Houghton Mifflin

Physical Chemistry: A Guided Inquiry Atoms, Molecules, and Spectroscopy, by Moog, Spencer and Farrell; Houghton Mifflin

Physical Chemistry, 4th Ed., Laidler/Meiser
Chap 1: Kinetic Theory of Gases
Chap 9: Chemical Kinetics I.
Chap 10: Chemical Kinetics II
Chap 11: Quantum Mechanics and Atomic Structure
Chap 12: The Chemical Bond
Chap 13: Foundation of Chemical Spectroscopy
Chap 14: Some Modern Applications of Spectroscopy

References: Experiments in Physical Chemistry, 6th Ed. Shoemaker, David P.

Grading Procedure:

5 Class quizzes and homework (4% each) 20%
4 Tests: 60%
1 Final American Chemical Society Exam: 20%

A: >85.0; **B**: 75.0 ~ 84.9; **C**: 65.0 ~ 74.9; **D**: 50.0 ~64.9; **F**: <50.0

ATTENDANCE POLICY:

All students are expected to attend classes on a regular basis. The Department of Chemistry adheres to the attendance policy set by the University as stated in the most current Undergraduate Catalog. The attendance record is kept by roll check. Being more than 5 minutes late or missing a daily quiz is equivalent to missing a lecture. Excessive absence is defined as missing more than 10% of the lectures or more than 10% of the laboratory sessions without excusable reasons. Excessive absence will be reported to the Dean of the College and the Dean of Students. In addition, **according to the TAMU-Commerce Procedure A13.02, if a student has excessive absences, the instructor may drop the student from the course**. The instructor will only excuse an absence if the student provides, with appropriate documents an excusable reason allowed by the TAMU-Commerce Procedure A13.02. Regular class attendance is necessary in order to pass this course.

DISHONESTY:

Cheating on examinations and any other in-class assignments will not be allowed. Any instance of cheating will result in a grade of "F" for that assignment and could result in dismissal from the course. Working together for the post-laboratory or any other take-home assignment is encouraged; however, after the discussion, you should work out the assignments by yourself. Freedom to discuss problems on the homework or post-lab report does not mean that you can copy answers word-for-word. There must be evidence that you worked the problem out on your own. Blatant plagiarism will result in a grade of "F" for the assignment. Proven offenders will be dismissed from this course with a grade of "F" assigned. The offender will be reported to the Dean of the College and the Dean of Students.

HOW TO BE SUCCESSFUL IN PHYSICAL CHEMISTRY

- This is probably the hardest course you have taken or will ever take, and hard work is required; expect to spend 10 to 20 hours per week outside of class studying. Learning requires practice that can only be done by the student alone, by careful reading and working of homework; it is as true in learning physical chemistry as it is in any pursuit.
- Attend class regularly; *do not fall behind*.
- Preview course content *before* class; reread them afterwards.
- Study all text *examples* carefully, filling in the missing steps and checking units at all stages.
- Do problems! Each assigned problem illustrates an important concept -- careful rereading and study of the text is usually required to work problems. Do all the problems assigned; then work some of your own choosing from the others in the chapter!
- Timing is important. Attempt problems immediately after covering the material; if you can't do them, reread the material. If you still can't do a problem, seek help immediately. This is a time-consuming process, but is important for the learning process. You CANNOT learn physical chemistry the night before an examination.

CLASS SCHEDULE: (TENTATIVE)

Week	Text/Activity	
WK 1	Introduction	
WK 2	Chap. 9 / Thermo-K1 - 2	
WK 3	Chap. 9, 10 / Thermo-K2 – 4,	
WK 4	Chap. 9, 10 / Thermo-K5, 5A, 6	
WK 5	Chap. 1, 10 / Thermo-K6, 6A, 6B	Test I
WK 6	Chap. 11/ AMS-1, 2,	
WK 7	Chap. 11/ AMS-3, 4, 5	
WK 8	Chap. 11, 12 / AMS-6, 7	Test II
WK 9	Spring Break	
WK 10	Chap. 12 / AMS-8, 9	
WK 11	Chap. 12 / AMS-10, 11, 12, 13	
WK 12	Chap. 13 / AMS-14, 15	Test III
WK 13	Chap. 13 / AMS-16, 17	
WK 14	Chap. 14 / AMS-20, 21	
WK 15	Chap. 14 / AMS-22, 23	Test IV
WK 16	Review	
WK 17	----------Final ACS Exam----------	

Test I: K 1-6B / Chap. 9-10
Test II: AMS 1-7 / Chap. 11-12
Test III AMS 8-15 / Chap. 12 & 13
Test IV: AMS 14-23 / Chap. 13 & 14
Final: Comprehensive ACS exam

**Students requesting accommodations for disabilities must go through the Academic Support Committee. For more information, please contact the Director of Disability Resources & Services, Halladay Student Services Bldg., Room 303D, (903) 886-5835.*

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. (See Student's Guide Handbook, Policies and Procedures, Conduct.)