Course Outline and Goals

Physical Chemistry II course 50:160:346 is designed as an introduction to the principles of Thermodynamics and Chemical Kinetics. The major goals for this course are centered around acquiring a conceptual understanding of basics of physical thermodynamics, chemical thermodynamics, chemical kinetics, and developing your ability to apply these concepts to solve problems as pertinent to professional duties and interests of Chemists. Some specific goals the students need to achieve in this Course are listed here:

1. learn the sophisticated models of changes in physical and chemical properties of substances and their mixtures, based in the fundamental laws and rules of Thermodynamics;
2. be able to apply the concepts, methods and techniques of Thermodynamics to chemical systems and make predictions of behavior of those systems;
3. have the ability to use simple physical model systems, i.e. ideal gas, as models for understanding more complex systems;
4. use elements of statistical thermodynamics to calculate macroscopic thermodynamic properties for simple chemical systems from the properties of microscopic systems;
5. have the ability to calculate the quantitative thermodynamic properties of chemical substances that result in thermodynamic equilibrium;
6. appreciate the role of chemical kinetics and rates of chemical reactions in Chemistry, physical and life sciences;
7. be able to derive kinetic rate laws for simple chemical processes from proposed mechanisms;

8. demonstrate an ability to use calculus with confidence and apply it to problems in Thermodynamics and Chemical Kinetics;

9. develop and demonstrate an ability to approach unfamiliar specific physical problems, and identify what conceptual and factual background information is needed to solve this particular problem using physically reasonable, justifiable and testable assumptions;

10. foster critical analytic thinking and logical reasoning skills which are of great value in your future work in science or science-related areas, whether it be this course, other advanced courses, graduate school or medical school, industrial laboratory or business profession.

**Access to Course Materials**

A Sakai course site has been created for this course. The course materials will be uploaded as needed. All students must have a Rutgers email address (RU Net ID) in order to access Sakai at [https://sakai.rutgers.edu](https://sakai.rutgers.edu). New email accounts may require 24-48 hours before Sakai courses are activated.

**Attendance**

*Attendance of Classes* is not required; however, regular attendance will significantly help the students to succeed in this rather difficult Course. Sign-up sheets will be distributed for every Class, and the attendance will be monitored. Students with the pattern of regular attendance of Classes will be given a bonus up to 5% of the total points earned during the semester, at discretion of the Instructor.

*Attendance of two Midterm Exams and Final Exam* is required. I will grant permission to have a make-up Exam if the absence is due to any of the following documented reasons: (1) serious illness with doctor’s note; (2) an order from the US Military; (3) officially representing the College; (4) death in the immediate family. The Instructor needs to be notified of the absence due to any of those reasons before the Exam, and the proper documentation must be provided in a timely fashion, before the make-up Exam is to take place. No make-up Exams will be provided in case of the non-attendance of these Exams for any other reasons. An officially announced Rutgers Severe Weather policy will supersede those attendance requirements.
Reading
Students are expected to have reviewed the required Chapters of the Book prior to each Lecture. Assigned Chapters and Content of each Lecture are provided at the beginning of the Power Point 2003 file of the given Lecture. The Power Point file with the full content of each Lecture will be posted to Sakai on the day prior to the scheduled day of each Lecture (Sakai course site, menu item under Schedule).

Homework/Problem Sets
Homework is essential for continuous progress of your education. There will be five graded Problem Sets throughout this semester that will be posted on Sakai. Deadline for submission of homework is one week (seven days) from the day the given Problem Set is announced in class and posted on sakai. Submission of homework past due will result in zero grade for that homework. Working in groups on the homework is not prohibited, but rather encouraged, since group work can greatly improve your understanding of a subject. However, the homework each student submits must be his/her own, and must be written in his/her own words. Submission of identical homework by two or more students constitutes plagiarism, and will result in zero grade for the given homework for all students involved. The repeated submission of identical homework by the same students will result in application of provisions of Rutgers University Academic Integrity Policy, http://academicintegrity.rutgers.edu/policy-on-academic-integrity.

Exams
Two closed-book Midterm Exams in addition to a closed-book Final Exam will be given during the semester. Midterm Exams are tentatively scheduled for last week of February and middle of April. The exact schedule for midterm Exams will be provided two weeks prior to each Exam. Midterm Exam #1 will cover the content of this semester learnt before midterm Exam #1. Midterm Exam #2 will cover the content given since midterm Exam #1 until the midterm Exam #2. Final Exam will cover the content of the whole course, and its schedule is provided by the Office of Registrar at http://registrar.camden.rutgers.edu/spring13_exam.html. Review Lectures will be given before each of those Exams. During those closed-book Exams, the Rutgers University Academic Integrity Policy will be enforced: http://academicintegrity.rutgers.edu/policy-on-academic-integrity
Grading (max):

Homework: 25 pts.: five graded Problem Sets #1-5, 5 pt. max each.
Midterm Exam #1: 25 pts.
Midterm Exam #2: 25 pts.
Final Exam: 25 pts.
Total: 100 pts. = 100 %
Good Attitude Bonus: up to 5 pts. for >90 % attendance (at discretion of instructor)

Work/Study Ethics and Professional Behavior

Work/Study Ethics and Professional Behavior [http://studentconduct.rutgers.edu/university-code-of-student-conduct](http://studentconduct.rutgers.edu/university-code-of-student-conduct) are essential for success of your learning and your future professional career. Disruptive behavior of the students during Classes will not be tolerated. Disruptive behavior includes, but not limited to, patterns as on Rutgers website [http://studentaffairs.camden.rutgers.edu/classroomdisruption.html](http://studentaffairs.camden.rutgers.edu/classroomdisruption.html). Repeated disruptive behavior may result in the **loss of up to 10 % of the total points** accumulated by the given student during the semester.