Syllabus CHEM 1420 Physical Chemistry 2 Fall 2018

Lecture: MoWeFr 10:00-10:50 in 150 Chevron
Recitation: Tu 11:00-11:50 in 150 Chevron

Instructor: David Ewing, Ph.D. dwewing@pitt.edu Office: 318 Chevron
Email will normally be answered within 24 hours.

Office hours: Mo 1:00-3:00 in 318 Chevron, We 11:00-1:00 **in 501 Chevron**, and by appointment. I will also be available right after most of our classes and recitations.

Course description: This course will introduce thermodynamics, statistical thermodynamics, the kinetic theory of gasses, and kinetics, with an emphasis on thermodynamics. Detailed topic list: Gases; Zeroth Law of Thermodynamics; First law of Thermodynamics; Joule-Thomson Coefficients; Heat Capacities; Hess's Law; Enthalpies of Formation; Second Law of Thermodynamics; Third law of Thermodynamics; Free Energy; Chemical Potential; Maxwell Relationships; Fugacity; Chemical Equilibrium; Single-Component Systems; Phase Diagrams; Phase Rule; Multiple-Component Systems; Colligative Properties; Electrochemistry; Ionic Solutions; Maxwell-Boltzmann Distribution; Partition Functions; Thermodynamic Properties from Partition Functions; Velocity Distributions of Gas Particles; Effusion and Diffusion; Reaction Rates; Rate Laws; Temperature Dependence of Reaction Rates; Collision Theory; Transition-State Theory.

Text: Ball, D. *Physical Chemistry*, 2nd ed.; Cengage, 2015.

We will cover chapters 1-8 and 17-20. Some supplemental topics, or enhancements of topics in the textbook, will occasionally be presented. A class schedule will be maintained as we go along, and posted in the Syllabus section of CourseWeb.

CourseWeb: Course information will be posted at https://courseweb.pitt.edu. This will include announcements, lecture notes, homework assignments, your scores, and this syllabus - updated as needed.

How the class will be conducted: The course will be lecture based, but a considerable amount of time will be devoted to problem solving. You are required to attend all lecture and recitation periods.

Exams & Examlets: The final exam will be comprehensive, and is scheduled for Thursday, December 13, 8:00-9:50 am. There will be two take-home exams, tentatively after chapter 4 and after chapter 18. There will also be several "examlets", i.e. extensive quizzes. The first examlet will be on September 11. There are no make up exams or examlets, and they can be taken early only for valid reasons. Exams and examlets will focus on problem solving.

Homework: Problems will be assigned for each chapter. These will not be collected or graded. I will give you the worked out solutions after you've had time to work on a given assignment. The homework will serve as a basis for the exams and examlets.

Symbolic Math Exercises: During the semester approximately 10 of these problems will be assigned from the back of the chapters or provided by the instructor. These will be graded.

Grades:

Examlets	40%
Take-home Exams	30%
Symbolic Math	10%
Final Exam	20%

It is anticipated that A/B/C = 90%/80%/70% with pluses and minuses will be used for the course grade, but this could be more munificent at the discretion of the instructor.

Changes to course structure: The Instructor reserves the right to change this syllabus as needed, and will inform the class verbally and on CourseWeb of any changes.

Academic Integrity Statement: Cheating/plagiarism will not be tolerated. Students suspected of violating the University of Pittsburgh Policy on Academic Integrity will be required to participate in the outlined procedure. A minimum sanction of a zero score for the quiz or exam will be imposed. See www.cfo.pitt.edu/policies/policy/02/02-03-02.html.

Disability Resources: If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both the instructor and the Office of Disability Resources and Services as early in the semester as possible, 140 William Pitt Union at 412-648-7890 or http://www.studentaffairs.pitt.edu/drs/

To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor. Any such recording, properly approved in advance, is limited to the student's own private use.

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