Physical Chemistry–I (CHEM-3411-A)
Term: Fall 2015

Instructor:
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Teaching Assistant
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Textbooks:
Required: "Physical Chemistry" 9th Ed., Peter Atkins and Julio De Paula, (Freeman & Co., New York, 2010) – ISBN: 1-4292-1812-6. This book includes two volumes. CHEM 3411 covers the material of the first volume. The second volume is covered by CHEM 3412. Therefore, you may want to consider buying only "Physical Chemistry, Volume 1: Thermodynamics and Kinetics", 9th Ed., Peter Atkins and Julio De Paula, (Freeman & Co., New York, 2010) – ISBN 1-4292-3127-0.

Alternative: "Thermodynamics, Statistical Thermodynamics and Kinetics", Second Edition by T. Engel and P. Reid, ISBN-13: 978-0321766182

Prerequisites: CHEM 1310 (or equivalent) is an enforced prerequisite. Mathematics through Calculus III, and calculus-based physics is very helpful.

Course description: This is part of a two-semester sequence of courses in physical chemistry for science and engineering students. This course covers chemical thermodynamics and kinetics.

Communications: Information will be sent by e-mail (through T-Square). Archival information such as lectures, homework assignments, solutions and supplementary material will be made available on T-Square (https://t-square.gatech.edu).

Grading policy: Course grades will be based on two in-class exams (scheduled for Oct. 2 and Nov. 6, 2015), a final in-class exam the week of Dec7-11, 2015, and homework. Each exam will count as 25%, the final exam 35%, and the homework 15%.

Schedule, make-ups and drops: You must take the exam at the assigned lecture time. Photo-ID is required at each exam. The only valid reasons for missing an exam are illness or official Tech business. Make-ups can only be given if advance notification is given or upon presentation of a doctor's note. All make-up exams must be administered before the exams are returned to the class. Exams not made-up by this time, for any reason, will receive a score of zero.

Homeworks: A list of homework assignments will be given regularly, weekly or bi-weekly. Homework will be graded based and all work should be shown in solving the problems. Corrected assignments will be available in the TA's office.

Honor Code: Students are expected to adhere to the Georgia Tech honor code (http://honor.gatech.edu). The work you submit on examinations must be entirely your work without reference to notes or other materials.

Schedule: We will try to keep with the schedule below. **Class participation is expected**, so the schedule will conform somewhat to the level of participation.

Topics:
• Course Introduction and the Properties of Gases
Lectures: Aug. 17, 19, 21

• First Law of Thermodynamics
Lectures: Aug. 24, 26, 28, 31, Sept. 2, 9, 11 (Note: Sept. 7 Holiday)
Recitation: Sept. 4

• The Second Law of Thermodynamics
Lectures: Sept. 14, 16, 21, 23, 25, 28, 30
Recitation: Sept. 18

Exam No. 1: Oct. 2, 2015

• Physical Transformations of Pure substances, Simple Mixtures and Phase diagrams
Lectures: Oct. 5, 7, 9, 14, 16 (Note: Oct. 12 Holiday)

• Equilibrium and Dynamic Electrochemistry
Lectures: Oct. 19, 21, 23, 30, Nov. 2, 4
Recitations: Oct. 26 and 28

Exam No. 2: Nov. 6, 2015

• Molecules in Motion
Lectures: Nov. 9, 11, 13

• Introduction to Chemical Kinetics
Lectures: Nov. 16, 18, 20 (Note: Nov. 25-27 Holiday)
Recitation: Nov. 23

• Molecular Reaction Dynamics –special topic week. Content will not be on final exam.
Lectures: Nov. 30, Dec. 2, 4

Final Exam Week - Dec. 7-11, 2015