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Phone: 894-2793 W: 1:30-4:30 Th: 12:15 – 3:15

OFFICE HOURS: MW: 10:00 – 12:00 *I will gladly answer questions by appointment or at any other time I am available.*

TEXTBOOK: 10th Ed., *Physical Chemistry Thermodynamics, Structure, and Change; Volume I: Thermodynamics and Kinetics*, by Peter Atkins and Julio de Paula
ISBN-13: 978-1-4641-2451-8 ISBN-10: 1-4641-2451-5
You can also get an etext version of the book at a reduced cost through
<http://ebooks.bfwpub.com/pchem10e.php>
Online resources are at <http://global.oup.com/uk/orc/chemistry/pchem10e/>

CONTENT:

Physical chemistry describes the physical principles that govern the properties and behavior of chemical systems. Physical chemistry can be divided into four main areas of study: thermodynamics, quantum mechanics, statistical mechanics, and kinetics. This fall we hope to cover primarily thermodynamics and kinetics. We also will delve into some statistical mechanics. This is a very ambitious task. Tentative short-range schedules of topics to be covered in lecture and specific homework assignments will be issued periodically in class and on Moodle.

CLASS NOTES, REFERENCE MATERIALS, AND E-MAIL:

Considerable correspondence may be necessary by email. Selected class materials will be posted on the course website on Moodle (<http://moodle.davidson.edu/moodle2/>). I encourage you to familiarize yourself with the Moodle website as soon as possible.

GRADING:

Your grade will be based on 4 reviews (worth 50% of final grade), special assignments, quizzes, homework, attendance and class participation (worth 15% of final grade), lab (worth 20%) and a comprehensive final (15% of your final grade). In general we will have a review after every two chapters. The final will be comprehensive.

Grade scale: 93-100 A; 90-93 A-; 87-90 B+; 83-87 B; 80-83 B-; 77-80 C+; 73-77 C; 70-73 C-; 67-70 D+; 60- 67 D; <60 F. I may find it necessary to adjust scores (either a standardization procedure or simple sliding curve) at times, but this is completely at my discretion and judgment.

ATTENDANCE POLICY:

Attendance will be taken utilizing a sign-up procedure. The responsibility for obtaining missed material lies with the student. If more than 25% of the lectures **or** 25% of the labs are missed an automatic failing grade will be issued.

HOMEWORK AND REVIEW POLICIES:

I will be giving a list of homework that will be due. Eventually, solutions to these problems will either be posted or worked out in class. **Students are not allowed to use tests, assignments, and homework done by students who have taken this course previously.** Solutions for the a) exercises and the odd problems can be found here: <http://global.oup.com/uk/orc/chemistry/pchem10e/student/solutions/> . **No other solution manuals are allowed!** *Use of these materials will be considered a violation of the Honor Code.* Students are allowed to use MathCad or Mathematica as well as Excel and Word. I expect students to be working together on homework assignments.

Reviews will be administered outside of class and can be taken within a three day window except the final which will be taken during finals week. *The reviews can be time intensive.* Though some reviews can be longer, each review will be at least two and a half hours long. The reviews are expected to be

submitted *along with printouts* of all work done using Mathematica or MathCAD or Excel *within the time allotment*. Obviously, because of the time deadlines of a review, you will want to become very proficient using math and text programs as well as getting up to speed mathematically (algebra and calculus). It is also very critical that you arrange your schedule in a way that a computer and the programs you will need are available to you.

All reviews will be closed book. The review dates will run from Monday to Wednesday. The reviews will typically be two hours in length *and must be completed by 9:00 pm*. You are required to send an email message to me at least **24 hours in advance** informing me of the intended date and time that you are going to take the review. *You will email me at the time you begin the exam and email me when you are finished*. You can take periodic breaks but your review must be left in the building. **You will take the review in the Martin Science Building on the date and time you gave me**. You can take periodic breaks but your review must be left in the building. *Your review time includes any breaks you think you may need*. **Failure to document location, date, and time on the review will automatically earn a failing grade**. *When the review is turned in I expect your work to be in order, clearly marked, and in the correct form!* Do not expect me to look for your answers and wade through your work, it must be organized and any final numerical answer boxed or highlighted. You are not allowed to use any websites or the net. Obviously, you can use your calculators. *Computer failures or lack of computer access or a faulty calculator will not be accepted as an excuse for failure to get your review done in the time allotted, so plan accordingly*. How a problem was worked is more important to me than the answer so document your work in a way that I can clearly see your method. Do not expect partial credit if your work is disorganized and poorly documented.

Those students with special needs will need to have the Student's Affairs office contact me immediately. Special out-of-class review sessions can be scheduled if requested. Permission to reschedule missed reviews will be granted only in the event of personal emergencies and then only upon a written request by the student with appropriate documentation to the instructor. The request should outline the reason for the delayed review, have appended any documentation requested by the instructor, and be signed by both the student and instructor. Unexcused absences result in zero credit.

HONOR CODE:

I support the Davidson College Honor Code and I expect the students do also. The homework problems do not need to be pledged except in the areas of solution manuals and the use of previous student's work (see above policy section). The Honor Code does apply to all reviews, quizzes, and the final exam. It will also apply to *some* of the special topics problems that are part of the reviews.

GENERAL COMMENTS:

Unfortunately, there is no easy way to learn physical chemistry. You learn it the same way you learn any subject – by working at it (reading, paying attention in class, asking questions, discussing topics with the instructor and with each other, working problems, praying, fasting, sleep deprivation, ...working more problems). Do not wait too long before you begin working. Physical chemistry is a linear course in which new material frequently relies on mastery of the preceding material. *Therefore, you must begin studying seriously from Day One!!!*

Make sure you understand the homework problems and all derivations. If there is anything you don't understand about the course content or policy, ask questions, and continue asking them until you receive satisfactory answers. I cannot answer your questions unless you ask them, and I believe strongly that the only stupid questions are those that are not asked. **Good luck!**

REVIEW SCHEDULE

Review #1 Sept 15-17

Review #2 Oct 6-8

Review #3 Nov 3-5

Review #4 Dec 3-5

LAB SCHEDULE

Math and Computational Software Review – five weeks

Bomb Calorimetry – Sept 24,25 and Oct 1,2

Vapor Pressure – Oct 8,9 and Oct 15, 16

Freezing Point Depression – Oct 22, 23 and Oct 29,30

Iodination – Nov 12,13 and Nov 19,20