

Chemistry 410B: Physical Chemistry

Course Syllabus

Fall 2023, Mon, Wed, & Fri 12:00 to 12:50 , GMCS-314

Instructor Dr. David Pullman, CSL-301, 619-594-5573, dpullman@sdsu.edu

Office Hours Mon 7:45-9:00 PM by zoom; Wed 4:45-6:00 PM in CSL-301

Textbook *Physical Chemistry, 12th Ed., Vol. 1*, P.W. Atkins, J. de Paula, and J. Keeler, Oxford University Press. Both print book and ebook versions are available. Purchasing either one gives you access to additional resources located on the Oxford Learning Link website.

Prerequisites Chemistry 232, 232L, 251, 410A

Catalog Description Theoretical principles of chemistry with emphasis on mathematical relations. Theory and practice in acquisition and statistical analysis of physical measurements on chemical systems.

Course Overview The focus of Chem 410B is on Thermodynamics and Chemical Kinetics. In each of these areas, we will first discuss the underlying principles on which they are founded and then use these principles to guide us in calculating properties of physical and chemical systems.

Topics The main topics in Chem 410B are:

Thermodynamics	Chapters 1-6
Kinetics	Chapters 16-18

Course Structure Chem 410B consists of three hour-long, in-person lectures each week. The lectures will roughly follow the text, with additional material occasionally added.

Exams & Quizzes

Exam 1 Tentatively Chapters 1-2
Exam 2 Tentatively Chapters 3-4
Exam 3 Tentatively Chapters 5-6
Exam 4 Tentatively Chapters 16-17
Final Tentatively Chapter 18 and cumulative Mon Dec 18, 10:30-12:30

Quizzes at the end of Chapters 1, 3, 5, and 16 will also be given

- Quizzes and exams (except the final exam) will be given during the lecture hour
- No makeup quizzes or exams will be given.
- Dedicated calculators may be used during exams; cell phones and other electronic gadgets, such as ipods and ipads, must be turned off before the start of exams.

Grading Quizzes 4% each Exams 1-4 16% each Final 20%
+/- grading and a curved scale will be used

Student Learning Outcomes Upon completing Chem 410B, students will be able to:

1. Articulate and understand the basic principles of Thermodynamics
2. Calculate thermodynamic properties of chemical samples and chemical reactions
3. Articulate and understand the basic principles of Chemical Kinetics
4. Calculate kinetic properties of physical processes and of chemical reactions
5. Describe the difference between Thermodynamics and Kinetics
6. Describe contributions and/or perspectives of Physical Chemists from varying backgrounds

- Canvas** Canvas will be used to post announcements and course documents (problem sets, solution keys to problem sets, quizzes, and exams, etc.).
- Problem Sets** There will be one or two problem sets per chapter. Problem sets will ***not*** be graded; you do not need to hand them in. You can download them from the Canvas website for Chem 410B. **Doing the problem sets is of the utmost importance to learning the material and doing well on quizzes and exams.**
- The **BAD**, but easy, way to do a problem is to look at the solution while you think about the problem. Nearly as bad is to think about a problem for five minutes, give up, and then look at the solution key. You are doing yourself a substantial disservice if you approach the problem sets in this fashion.
- The **GOOD**, but more difficult, way is to focus your energy on a problem for a sustained period (say 30 minutes). If you can't answer the problem, go on to another problem—but do not look at the answer key if it is already available. Later on, after you have done other problems, things may gel in your mind, and you may see how you should approach the problem. **Real learning involves, among other things, recognizing patterns in problems and comes only after a significant effort on the part of your brain.**
- Add/Drop Procedure** The add/drop deadline is Tuesday Sept 1, 2023 at 11:59 PM. For details, see http://arweb.sdsu.edu/es/registrar/schedule_adjustment.html
- Students with Disabilities** If you are a student with a disability and believe you will need accommodations for this class, it is your responsibility to contact Student Disability Services at [\(619\) 594-6473](tel:6195946473). To avoid any delay in the receipt of your accommodations, you should contact Student Disability Services as soon as possible. Please note that accommodations are not retroactive, and that accommodations based upon disability cannot be provided until you have presented your instructor with an accommodation letter from Student Disability Services. Your cooperation is appreciated.
- Academic Honesty** Cheating amounts to lying because you are saying that you did the work as instructed whereas, in fact, you did not. Cheating will not be tolerated and will result in grade reduction. It will also be documented according to university rules (see https://newscenter.sdsu.edu/student_affairs/sr/academic-dishonesty.aspx).