

CHEM. 362 PHYSICAL CHEMISTRY I

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Fall 2021
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TEXTS: *Physical Chemistry*, 2nd edition by D.W. Ball, 2015.

| TOPIC | CHAPTER |
|--------------------------------------|---------|
| Gases..... | 1 |
| The First Law of Thermodynamics..... | 2 |
| The Second and Third Laws..... | 3 |

EXAM I: September 21

| | |
|---|---|
| Free Energy and Chemical Potential..... | 4 |
| Chemical Equilibrium..... | 5 |
| Single Component Equilibrium..... | 6 |
| Multiple Component Equilibrium..... | 7 |

EXAM II: November 9

| | |
|------------------------------|----|
| Electrochemistry..... | 8 |
| Kinetic Theory of Gases..... | 19 |

Final Exam: December ??

Grading policy:

Each hourly exam is worth 300 points. The final exam is worth 400 points.

Homework will be assigned but not collected. **All in-class assignments (exams) must be done with non-programmable devices (pencil, pen, slide rule, abacus, calculator). Use of a programmable calculator on an in-class assignment will result in a score of 0 on that assignment.**

Students with Disabilities

Request for Accommodations: Reasonable academic accommodations may be provided to students who submit appropriate and current documentation of their disability. Students are encouraged to contact the Center for Teaching and Learning Excellence (CTLE) at disabilityservices@scranton.edu or (570) 941-4038 if they have, or think they may have, a disability and wish to determine eligibility for any accommodations. For more information, please visit www.scranton.edu/disabilities.

Writing Center Services

A valuable resource, the Writing Center welcomes student writers engaged in the writing process. Trained writing consultants from various academic disciplines work one-on-one with student writers on all aspects of writing.

Students can make an appointment through the My.Scranton portal: my.scranton.edu -> Self Service -> Student & Financial Aid -> CTLE Menu.

For more information, please visit the Writing Center webpage <https://www.scranton.edu/academics/ctle/writing/index.shtml> .

Academic honesty:

The first time that a student is caught plagiarizing or using fabricated data in a report, he or she will receive a grade of zero points for that assignment. For further consequences of violating academic ethics please refer to the University of Scranton Student Handbook.

<https://www.scranton.edu/academics/wml/acad-integ/acad-code-honesty.shtml>

ASSIGNMENTS

CHAPTER

1: 12-14, 23-30, 37, 39, 51, 73-76

2: 4-9, 15, 16, 23-25, 39-42, 57-62, 74-78

3: 5-7, 16-25, 31-34, 47-51

4: 13-20, 49-57

5: 6-11, 13-18, 28-33, 46-52

6: 11-18, 23, 25, 30, 31, 34-42

7: 8-21, 29, 30, 43-45, 55, 56, 67-73

8: 10, 11, 18-21, 29-43, 59-68

19: 14, 25, 33, 46-49, 56-59

The SLO Track

In completing this course students should be able to:

1. determine the physical properties of a gas from its equation of state
2. calculate heat and work resulting from gas expansion and chemical reactions
3. determine colligative properties of ideal solutions
4. predict thermodynamic properties of phase transitions
5. use thermodynamic information to determine electrochemical quantities
6. describe the distribution of speeds of a gas, how it changes with conditions, and calculate the fraction of molecules within a certain range in speed
7. use the Gibbs reaction energy and thermodynamic relations to determine the dependence of equilibrium on thermodynamic properties