CHEM. 360 BIOPHYSICAL CHEMISTRY
CHEM. 560 INTRODUCTION TO THERMODYNAMICS

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TEXTS: Physical Chemistry, Volume 1, Twelfth Edition, P.W. Atkins, J. de Paula, J. Keeler 2023.
Biochemical Calculations, Second Edition, Segel, 1976.

TOPIC	TEXT:FOCUS
Equations of State	A: 1
The First Law of Thermodynamics	A: 2
The Second and Third Laws	A: 3

EXAM I: September 23

Phase Equilibrium	A: 4,5
Chemical Equilibrium/Electrochemistry	A: 6/ S:1
Biochemical Equilibrium	S: 3

EXAM II: November 13

Kinetic Theory of Gases	A: 1, 16
Gas Kinetics	A: 17, 18
Enzyme Kinetics	S: 4

Final Exam: December??

Grading policy:

Each hourly exam is worth 300 points. The final exam is worth 400 points. Students enrolled in CHEM 560 (the graduate course) will also complete a literature review on a topic of their choice (but approved in advance by the instructor) in physical chemistry. The literature review will be seven-ten double spaced pages, and due December 9th.

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. The instructor reserves the right to further limit the use of calculators on in-class exams.**

Students with Disabilities

Students with disabilities may be eligible for reasonable academic and non-academic accommodations. Students are required to submit relevant and current documentation of their disability. Students are encouraged to contact the Office of Student Support and Success 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 academic accommodations. For non-academic accommodations, students should contact the Office of Equity and Diversity at non-academic-accom@scranton.edu or (570) 941-6645. Students can access accommodate by clicking here.

Writing Center Services

The Writing Center is a resource designed to help students at all academic levels become better writers. It is a safe space where students from any discipline can receive one-on-one feedback on written assignments from well-trained peer consultants who support students in any stage of the writing process. Students can make an appointment through the my.scranton portal: my.scranton.edu >OSSS Card >Writing Center Scheduler.

For more information, please contact writing-center@scranton.edu. For quick tips, user-friendly guides, and other writing resources, check out our blog at https://sites.scranton.edu/writingcenter.

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Academic honesty:

The first time that a student is caught cheating on an exam or quiz, 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/cte/acad-integ/acad-code-honesty.shtml

My Reporting Obligations as a Required Reporter

As a faculty member, I am deeply invested in the well-being of each student I teach. I am here to assist you with your work in this course. Additionally, if you come to me with other non-course-related concerns, I will do my best to help. It is important for you to know that all faculty members are required to report incidents of sexual harassment or sexual misconduct involving students. This means that I cannot keep information about sexual harassment or discrimination, sexual assault, sexual exploitation, intimate partner violence or stalking confidential if you share that information with me. I will keep the information as private as I can but am required to bring it to the attention of the University's Title IX Coordinator, Elizabeth M. Garcia, or Deputy Title IX Coordinator, Diana Collins Gilmore, who, in conversation with you, will explain available support, resources, and options. I will not report anything to anybody without first letting you know and discussing choices as to how to proceed. The University's Counseling Center (570-941-7620) is available to you as a confidential resource; counselors (in the counseling center) do not have an obligation to report to the Title IX Coordinator.

Non-Discrimination Statement

The University is committed to providing an educational, residential, and working environment that is free from harassment and discrimination. Members of the University community, applicants for employment or admissions, guests, and visitors have the right to be free from harassment or discrimination based on race, color, creed, religion, ancestry, gender, sex, pregnancy and related conditions, sexual orientation, gender identity or expression, age, disability, genetic information, national origin, ethnicity, family responsibilities, marital status, veteran or miliary status, citizenship status, or any other status protected by applicable law.

Students who believe they have been subject to harassment or discrimination based on any of the above class of characteristics, or experience sexual harassment, sexual misconduct or gender discrimination should contact Elizabeth M. Garcia, Title IX Coordinator, (570) 941-6645 elizabeth.garcia2@scranton.edu, or Deputy Title IX Coordinators Diana Collins Gilmore (570) 941-6645 diana.collinsgilmore@scranton.edu. The United States Department of Education's Office for Civil Rights (OCR) enforces Title IX. Information regarding OCR may be found at www.ed.gov/about/offices/list/ocr/index.html.

ASSIGNMENTS

CHAPTER

A: 1: **E** 1A.8-15; 1C.6-11; **P** 1A.7-9; 1C.2

2: **E** 2A.5-10; 2B.5-9; 2C.8-14; 2E.4-7; **P** 2A.2; 2C.2-5

3: **E** 3A.7-9; 3B.9-13; 3C.4-7; 3D.5-8; 3E. 6-8; **P** 3A.2; 3B.1; 3C.5,6

4: **E** 4A.7-9; 4B.7-12, 14-19; **P** 4A.1,2; 4B.1,2,9

5: **E** 5A.9-14; 5B.7-12; 5C.7,8; 5F. 9-11; **P** 5C.1

6: **E** 6A.9-21; 6B.5-8; 6C.7-10; 6D.4-6; **P** 6A.1,2; 6B.1,2; 6C.2; 6D.1

1: **E** 1B.7-9

17: **E** 17A.8-12; 17B.7-10; 17C.5; 17D.6-9; 17E.1-3; **P** 17A.1-3; 17B.3-5; 17D.2,3

S: 1: 1, 4, 8, 9, 17, 18, 34-37, 39.

3: 4, 8, 12, 21.

4: 4-10, 14-17.

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 preparation of a buffer solution for a particular acid/base pair

7. determine rate laws from kinetic data

8. plot enzyme kinetic data using one of the standard methods