CHEMISTRY 113
General and Analytical Chemistry II

C. Baumann (http://www.scranton.edu/faculty/baumann/) Spring 2024
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Office Hours: M 6:30-7:15 p.m.; W 1:00-1:50 p.m.; F 1:00-1:50 p.m.

Text: Chemistry: The Central Science, T. L. Brown, H. E. LeMay, Jr., B. E. Bursten, C. J. Murphy, P. M. Woodward, M. W. Stoltzfus Fourteenth ed., Pearson, 2014.

This course is the second half of a two-semester first-year sequence in chemistry. You will learn the properties of the states of matter and the fundamental ways of describing these properties. From there, you will learn about the rates of chemical changes and the concept of equilibrium. Chemical equilibrium will be covered in detail, with emphasis on acid-base, electrochemical and solubility equilibrium and equilibrium thermodynamics. You will be expected to be able to solve equilibrium problems and apply thermodynamic principles. **All in-class assignments (exams, quizzes) must be done with non-communicating devices (pencil, pen, slide rule, abacus, non-communicating calculator). Use of a communicating calculator on an in-class assignment will result in a score of 0 on that assignment.**

GRADING POLICY

Weekly quizzes will be given in the recitation. Three in-class, full-period exams will be given on the dates listed below. The final exam will be a two-hour comprehensive examination covering the entire sequence (CHEM 112 and CHEM 113). The grading for this course will be based on examination performance (100 points for each semester exam, 200 points for the final exam). The quiz total may be used to replace the lowest examination score. **The score for the first missed exam will automatically be replaced with the quiz total. No make-up exams will be given for missed exams.** Homework problems from the text will be assigned, but not collected. Attendance at all class meetings is expected. Six or more absences may result in a reduced grade for the course.

The course grade will be assigned using the following scale:

Total Points	Letter Grade	Total Points	Letter Grade
475	A	350	C+
450	A-	325	C
425	B+	300	C-
400	B	275	D+
375	B-	250	D

The instructor reserves the right to lower the grade thresholds at his discretion.

DATES	LECTURE TOPICS	CHAPTER
1/24-31	Gases	10
2/2-7	Intermolecular Forces	11
2/9-14	Solids	12
2/16	**EXAM I**	
2/21-28	Solutions	13
3/1-6	Chemical Kinetics	14
3/8	**EXAM II**	
3/18-22	Chemical Equilibrium	15
3/25-4/3	Acids and Bases	16
3/28-4/1	**EASTER BREAK**	
4/5-10	Aqueous Equilibria	17
4/12	**EXAM III**	
4/15-22	Thermodynamics	19
4/24-5/1	Electrochemistry	20
5/3-10	Nuclear Chemistry	21
5/?	**FINAL EXAM**	

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 Office of Student Support and Success (OSSS) 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.

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/studentlife/studentaffairs/dean/studenthandbook2022-2023.pdf

HOMEWORK ASSIGNMENTS

CHAPTER	PROBLEMS
10	19-24, 30-42, 53-58, 63-70, 81-82, 93-96
11	17-28, 43-46, 51-55, 59-62
12	13-16, 27-40, 57-66, 75-78
13	17-22, 33-56, 63-66, 69-74, 87
14	19-22, 27-36, 43-50, 53-56, 67-70
15	15-28, 31-38, 43-58, 61-68
16	15-48, 51-62, 70-82, 87-90, 95, 96
17	15-30, 33-48, 53-68
19	25-28, 39-42, 47, 48, 51, 52, 55-62, 79-82
20	15-26, 29, 30, 35-38, 43-48, 51-54, 63-66, 73-76
21	9-18, 21-23, 29-38, 45-48

The SLO Track

In completing this course students should be able to:

1. calculate a property of a gas using an equation of state.

2. evaluate the intermolecular forces of a substance based on its structure and determine the trends in bulk properties that will arise from those forces.

3. classify solids in terms of their crystal structures and determine the bulk properties of those solids.

4. calculate colligative properties of a solution.

5. determine the time dependence of a property of a system from a rate law.

6. calculate the amount of a substance present at equilibrium using an equilibrium constant.

7. calculate the concentration of acid and base species in an aqueous equilibrium.

8. calculate the solubility of a substance using its solubility product.

9. calculate thermodynamic properties from equilibrium constants and vice versa.

10. balance an electrochemical reaction and determine the potential of such a reaction.

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, 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 M. Collins, 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, religion, ancestry, gender, sex, pregnancy, sexual orientation, gender identity or expression, age, disability, genetic information, national origin, veteran 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 M. Collins (570) 941-6645 diana.collins @scranton.edu, or Ms. Lauren Rivera, AVP for Student Life and Dean of Students, at (570)941-7680 lauren.rivera@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