

Syllabus

Chemistry 335: Physical Chemistry (4 cr.)

Fall 2021

MRTF || 10:00 – 10:50 a.m. || CBB 261

Instructor: Dr. Erin D. Speetzen (she/her/hers)
Office Location: CBB 402

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Course Description

This course builds largely on concepts that you learned in CHEM 105 and CHEM 106. Its primary focus is on Thermodynamics which is the study of how energy changes as a result of chemical and/or physical processes

and also tells us whether or not a particular process will occur. We will build on the concepts of heat, Enthalpy, entropy, Free energy, equilibrium, and electrochemistry that you learned about in general chemistry. A large portion of our time will be spend deriving the equations you learned in CHEM 105/106 to learn under what specific set of conditions they can be used. Later in the course we will spend a few weeks revisiting chemical kinetics. While thermodynamics can tell us if a process will occur it is kinetics that tells us how quickly it will occur. We will revisit familiar concepts such as reaction rates, reaction orders, rate laws, and rate constants, as well as exploring in more detail how we can derive rate laws from reaction mechanisms, and how thermodynamics is related to kinetics. Throughout the semester, we will also spend time working on your data analysis skills, learning about how to read journal articles, and how to build good, scientific communication skills.

Course Learning Outcomes

1. Students will apply the foundational principles of classical chemical thermodynamics and kinetics to theoretical and practical problems.
2. Apply discipline-specific standards of oral and written communication to compose an articulate, grammatically correct, and organized presentation/piece of writing with properly documented and supported ideas, evidence, and information suitable to the topic, purpose, and audience.
3. Critique their own and others' writing/oral presentations to provide effective and useful feedback to improve their communication.

Evaluation/Course Requirements

| Assessments | Brief Description | Points/Percentage | Learning Outcomes Met (#) |
|-------------------|--|-------------------|---------------------------|
| Quizzes | Every other week you will take an in-class quiz covering recent course content. | 30% | CLO1 |
| Assignments | During the semester you will complete a series of assignment that involve one or more of the following skills: data analysis, reading journal articles, writing, oral presentation, peer-review. | 35% | CLO1 CLO2 CLO3 |
| Midterm Exam | You will take a cumulative midterm exam during class testing you on course content from the first half of the semester. | 10% | CLO1 |
| Final Exam | The final exam will be taken during the final exam period and will cover content from the entire semester, with an emphasis on material from after the midterm exam. | 15% | CLO1 |
| Student Choice #1 | Increase the weight of any of the assessments by 5% | 5% | |
| Student Choice #2 | Increase the weight of any of the assessments by 5% (you can choose the | 5% | |

| | | | |
|--|--|------|--|
| | same assessment for choice #2 and you did choice #1 and boost 1 assessment by 10%) | | |
| | Total | 100% | |

Required Course Materials

The following lecture text is available from textbook rental:

Ball, D. W. (2015) *Physical Chemistry* (2nd ed.) Stamford CT: Cengage. (ISBN-13: 978-1133958437 ISBN-10: 1133958435)

Note: If text rental has a laboratory text listed that is a mistake on their part. You do not need it for this course.

Office hours

I am available without an appointment on the days/times below. Individual meetings (either in person or over Zoom) can be arranged through an email request or conversation directly before or after class. I will hold normal office hours on Monday and Tuesday of Thanksgiving week. Office hours during finals' week will be by appointment only

Monday: 11 a.m. – 12 p.m.

Tuesday 11 a.m. – 12 p.m.

Thursday 3 – 4 p.m.

Friday 1 – 2 p.m.

Technology Guidelines

In this course you will be expected to

- Upload, download, and print documents from Canvas.
- Watch videos posted to the course Canvas site.
- Use Excel for graphing of experimental data.
- Carry out library searches.

Cell phone usage: Research supports that having visual access to a cell phone diminishes our ability to learn. Checking social media, texts, emails, and messages is unprofessional and disrespectful to our class community. Please turn off your phone during class; I will do so as well. If I notice that you are using your phone during class, I may ask you to share what you are researching or ask you to put it away. Thank you for following these guidelines as they help create a positive learning community.

Inclusivity Statement

It is my intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that the students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally, or for other students or student groups.

If you have experienced a bias incident (an act of conduct, speech, or expression to which a bias motive is evident as a contributing factor regardless of whether the act is criminal) at UWSP, you have the right to report it using this [link](#). You may also contact the Dean of Students office directly at dos@uwsp.edu.

Confidentiality

Learning requires risk-taking and sharing ideas. Please keep your classmates' ideas and experiences confidential outside the classroom unless permission has been granted to share them.

Grading Scale

A ≥ 90% A- ≥ 88%

B+ ≥ 86% B ≥ 77% B- ≥ 75%

C+ ≥ 73% C ≥ 63% C- ≥ 61%

D+ ≥ 59% D ≥ 50% F < 50%

Communicating with your Instructor



Email is the quickest way to reach me at: espeetze@uwsp.edu



Zoom Videoconference is also available by request.

Attendance

While there is no formal attendance policy for this course, the in-class activities that we complete during class time will be the best way to prepare for quizzes and exams and it is my expectation that students will make their best effort to attend all class sessions. The content in this course is challenging and it is likely that you will need help from your classmates and the instructor to be able to complete the activities. In the event that you do miss a class period due to illness, school-sponsored events, etc. you should complete the activity on your own and work with your classmates or the instructor to clear up any questions that you may have.

Please refer to the “Absences due to Military Service” and “Religious Beliefs Accommodation” below. Additionally, below are attendance guidelines as outlined by the [UWSP registrar](#):

During the first eight days of the regular 16-week term, I will take attendance. If you are not in attendance, you may be dropped from the class. You are responsible for dropping any of your enrolled classes.

- If you must be absent during the term, tell your instructor prior to the class you will miss. If you cannot reach your instructor(s) in an emergency, contact the Dean of Students Office at 715-346-2611 or DOS@uwsp.edu.
- If you are dropped from a class due to non-attendance, you may only be reinstated to the class section using the class add process. Reinstatement to the same section or course is not

guaranteed. Your instructors will explain their specific attendance policies to be followed at the beginning of each course.

- If you take part in an off-campus trip by an authorized university group such as an athletic team, musical or dramatic organization, or a class, make appropriate arrangements in advance with the instructor of each class you will miss. If you are absent from classes because of emergencies, off-campus trips, illness, or the like, your instructors will give you a reasonable amount of help in making up the work you have missed.
- If you enroll in a course and cannot begin attending until after classes have already started, you must first get permission from the department offering the course. Otherwise, you may be required to drop the course.
- If you do not make satisfactory arrangements with your instructors regarding excessive absences, you may be dismissed. If you are dismissed from a class, you will receive an F in that course. If you are dismissed from the University, you will receive an F in all enrolled courses.

Late Work

I am happy to provide extensions on assignments if you need them, however, I do ask that you make your request in advance of the due date and that you provide me with a date that you plan to turn in the material in.

If you miss class on the day of a quiz or exam you should contact the instructor as soon as you are able (in advance, if possible) to discuss rescheduling of the assessment. Students who cannot make the assessment up in a reasonable amount of time (dependent on the circumstance) may be given a zero.

Emergency Procedures

- In the event of a medical emergency call 9-1-1. Offer assistance if trained and willing to do so. Guide emergency responders to victim.
- In the event of a tornado warning, proceed to the lowest level interior room without window exposure at [list primary location for shelter closest to classroom,]. See www.uwsp.edu/rmgt/Pages/em/procedures/other/floor-plans.aspx for floor plans showing severe weather shelters on campus. Avoid wide-span structures (gyms, pools or large classrooms).
- In the event of a fire alarm, evacuate the building in a calm manner. Meet on the sidewalk between the CBB and the Science Building. Notify instructor or emergency response personnel of any missing individuals.
- Active Shooter – RUN. HIDE. FIGHT. If trapped, hide, lock doors, turn off lights, spread out and remain quiet. Call 9-1-1 when it is safe to do so. Follow instructions of emergency responders. See UW-Stevens Point Emergency Procedures at www.uwsp.edu/rmgt/Pages/em/procedures for details on all emergency response at UW-Stevens Point.

Absences due to Military Service

As stated in the UWSP Catalog, you will not be penalized for class absence due to unavoidable or legitimate required military obligations, or medical appointments at a VA facility, [not to exceed two \(2\) weeks](#) unless special permission is granted by the instructor. You are responsible for notifying faculty members of such circumstances as far in advance as possible and for providing documentation to the Office of the Dean of Students to verify the reason for the absence. The faculty member is responsible

to provide reasonable accommodations or opportunities to make up exams or other course assignments that have an impact on the course grade. For absences due to being deployed for active duty, please refer to the [Military Call-Up Instructions for Students](#).

Religious Beliefs Accommodation

It is UW System policy ([UWS 22](#)) to reasonably accommodate your sincerely held religious beliefs with respect to all examinations and other academic requirements.

You will be permitted to make up an exam or other academic requirement at another time or by an alternative method, without any prejudicial effect, if:

- There is a scheduling conflict between your sincerely held religious beliefs and taking the exam or meeting the academic requirements; and
- You have notified your instructor within the first three weeks of the beginning of classes (first week of summer or interim courses) of the specific days or dates that you will request relief from an examination or academic requirement.
- Your instructor will accept the sincerity of your religious beliefs at face value and keep your request confidential.
- Your instructor will schedule a make-up exam or requirement before or after the regularly scheduled exam or requirement.
- You may file any complaints regarding compliance with this policy in the Equity and Affirmative Action Office.

Equal Access for Students with Disabilities

UW-Stevens Point will modify academic program requirements as necessary to ensure that they do not discriminate against qualified applicants or students with disabilities. The modifications should not affect the substance of educational programs or compromise academic standards; nor should they intrude upon academic freedom. Examinations or other procedures used for evaluating students' academic achievements may be adapted. The results of such evaluation must demonstrate the student's achievement in the academic activity, rather than describe his/her disability.

If modifications are required due to a disability, please inform the instructor and contact the [Disability and Assistive Technology Center](#) to complete an Accommodations Request form. Phone: 346-3365 or Room 609 Albertson Hall.

Help Resources

| Tutoring | Advising | Safety and General Support | Health |
|--|---|--|---|
| Tutoring and Learning Center helps with Study Skills, Writing, Technology, Math, & Science. 018 Albertson Hall, ext 3568 | Academic and Career Advising Center, 320 Albertson Hall Ext. 3226 | Dean of Students Office, 212 Old Main, ext. 2611 | Counseling Center, Delzell Hall, ext. 3553. Health Care, Delzell Hall, ext. 4646 |

[Click here](#) to flag a policy or practice that disproportionately affects marginalized students

UWSP Service Desk (1st Floor, Albertson Hall)

The Office of Information Technology (IT) provides a Service Desk to assist students with connecting to the Campus Network, virus and spyware removal, file recovery, equipment loan, and computer repair. You can contact the Service Desk via email at techhelp@uwsp.edu or at (715) 346-4357 (HELP) or visit this [link for more information](#).

Care Team

The University of Wisconsin-Stevens Point is committed to the safety and success of all students. The Office of the Dean of Students supports the campus community by reaching out and providing resources in areas where a student may be struggling or experiencing barriers to their success. Faculty and staff are asked to be proactive, supportive, and involved in facilitating the success of our students through early detection, reporting, and intervention. As your instructor, I may contact the Office of the Dean of Students if I sense you are in need of additional support which individually I may not be able to provide. You may also share a concern if you or another member of our campus community needs support, is distressed, or exhibits concerning behavior that is interfering with the academic or personal success or the safety of others, by reporting [here](#).

Academic Honesty

Academic Integrity is an expectation of each UW-Stevens Point student. Campus community members are responsible for fostering and upholding an environment in which student learning is fair, just, and honest. Through your studies as a student, it is essential to exhibit the highest level of personal honesty and respect for the intellectual property of others. Academic misconduct is unacceptable. It compromises and disrespects the integrity of our university and those who study here. To maintain academic integrity, a student must only claim work which is the authentic work solely of their own, providing correct citations and credit to others as needed. Cheating, fabrication, plagiarism, unauthorized collaboration, and/or helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. Failure to understand what constitutes academic misconduct does not exempt responsibility from engaging in it.

UWSP 14.03 Academic misconduct subject to disciplinary action.

- (1) Academic misconduct is an act in which a student:
 - (a) Seeks to claim credit for the work or efforts of another without authorization or citation;
 - (b) Uses unauthorized materials or fabricated data in any academic exercise;
 - (c) Forges or falsifies academic documents or records;
 - (d) Intentionally impedes or damages the academic work of others;
 - (e) Engages in conduct aimed at making false representation of a student's academic performance; or
 - (f) Assists other students in any of these acts.

- (2) Examples of academic misconduct include, but are not limited to:
 - Cheating on an examination
 - Collaborating with others in work to be presented, contrary to the stated rules of the course
 - Submitting a paper or assignment as one's own work when a part or all of the paper or assignment is the work of another
 - Submitting a paper or assignment that contains ideas or research of others without appropriately identifying the sources of those ideas

- Stealing examinations or course materials
- Submitting, if contrary to the rules of a course, work previously presented in another course
- Tampering with the laboratory experiment or computer program of another student
- Knowingly and intentionally assisting another student in any of the above, including assistance in an arrangement whereby any work, classroom performance, examination or other activity is submitted or performed by a person other than the student under whose name the work is submitted or performed.

Students suspected of academic misconduct will be asked to meet with the instructor to discuss the concerns. If academic misconduct is evident, procedures for determining disciplinary sanctions will be followed as outlined in the [University System Administrative Code, Chapter 14](#).

Other Campus Policies

FERPA

The [Family Educational Rights and Privacy Act](#) (FERPA) provides students with a right to protect, review, and correct their student records. Staff of the university with a clear *educational need to know* may also have to access to certain student records. Exceptions to the law include parental notification in cases of alcohol or drug use, and in case of a health or safety concern. FERPA also permits a school to disclose personally identifiable information from a student's education records, without consent, to another school in which the student seeks or intends to enroll.

Title IX

UW-Stevens Point is committed to fostering a safe, productive learning environment. Title IX and institutional policy prohibit discrimination on the basis of sex, which includes harassment, domestic and dating violence, sexual assault, and stalking. In the event that you choose to disclose information about having survived sexual violence, including harassment, rape, sexual assault, dating violence, domestic violence, or stalking, and specify that this violence occurred while a student at UWSP, federal and state laws mandate that I, as your instructor, notify the Title IX Coordinator/Office of the Dean of Students.

Please see the [Title IX page](#) for more information for guidance on making confidential reports of misconduct or interpersonal violence, as well as campus and community resources available to students.

Clery Act

The US Department of Education requires universities to disclose and publish campus crime statistics, security information, and fire safety information annually. Statistics for the three previous calendar years and policy statements are released on or before October 1st in our [Annual Security Report](#). Another requirement of the Clery Act, is that the campus community must be given timely warnings of ongoing safety threats and immediate/emergency notifications. For more information about when and how these notices will be sent out, please see our [Jeanne Clery Act](#) page.

Drug Free Schools and Communities Act

The Drug Free Schools and Communities Act (DFSCA) requires institutions of higher education to establish policies that address unlawful possession, use, or distribution of alcohol and illicit drugs. The DFSCA also requires the establishment of a drug and alcohol prevention program. The Center for Prevention lists information about alcohol and drugs, their effects, and the legal consequences if found in possession of these substances. [Center for Prevention – DFSCA](#)

Copyright infringement

This is the act of exercising, without permission or legal authority, one or more of the exclusive rights granted to the copyright owner under section 106 of the Copyright Act. Each year students violate these laws and campus policies, putting themselves at risk of federal prosecution. For more information about what to expect if you are caught, or to take preventive measures to keep your computing device clean, visit our [copyright page](#).

Voter Registration Information

Register: Did you know you can register to vote and check your voter registration status at www.myvote.wi.gov?

Vote: In Wisconsin, you can vote absentee - or vote from home - in any election. You can request your absentee ballot at www.myvote.wi.gov (select "Vote Absentee" on the navigation page).

Make a Difference: Sign up to work the polls on election day by contacting your local city clerk office (find your clerk at <https://myvote.wi.gov/en-us/PollWorker>).

For more information on registration and voting procedure, visit your campus resource page at <https://linktr.ee/UWSPGOTV> or www.myvote.wi.gov

Course Schedule

Please note that the schedule below is tentative and is subject to change. Check the weekly plans on the course canvas page for the most up to date information on the schedule of course activities.

Course Outline

| Week | Chapter(s) | Quiz/Exam |
|------------|---|-------------------|
| 1 (8/30) | Classes start Thursday. Course Intro and General Chemistry Review | |
| 2 (9/6) | No class on Monday (Labor Day) Ch. 1 (Gases and the 0 th Law) | |
| 3 (9/13) | Ch. 1 (Gases and the 0 th Law) & Ch. 2 (The 1 st Law) | Quiz #1* |
| 4 (9/20) | Ch. 2 (The 1 st Law) | |
| 5 (9/27) | Ch. 2 (The 1 st Law) & Ch. 3 (The 2 nd and 3 rd Laws) | Quiz #2 |
| 6 (10/4) | Ch. 3 (The 2 nd and 3 rd Laws) & Ch. 4 (Gibbs Energy and Chem. Potential) | |
| 7 (10/11) | Ch. 4 (Gibbs Energy and Chem. Potential) | Quiz #3 |
| 8 (10/18) | Ch. 5 (Intro to Chem. Equil.) & Sections 8.6 & 8.7 (Ions in Solution) | |
| 9 (10/25) | Midterm Exam and Review | Midterm Exam* |
| 10 (11/1) | Ch. 6 (Equil. In Single Comp. Systems) and Ch. 7 (Equil. In Multi-Comp. Systems) | |
| 11 (11/8) | Ch. 7 (Equil. In Multi-Comp. Systems) | Quiz #4 |
| 12 (11/15) | Ch. 8 (Electrochemistry) and Ch. 19 (Kinetic Theory of Gases) | |
| 13 (11/22) | No class Thursday or Friday (Thanksgiving Break) | Quiz #5 |
| 14 (11/29) | Ch. 20 (Kinetics) | |
| 15 (12/6) | Ch. 20 (Kinetics) | Quiz #6 |
| 16 (12/13) | Wednesday December 15th – FINAL EXAM (12:30 – 2:30 p.m.) | Final Exam |

*Exact dates for quizzes and exams will be posted in the weekly plan in Canvas.