



## CHEM 3075 Physical Chemistry 2 Lab Syllabus

For additional course information, including prerequisites, corequisites, and course fees, please refer to the Catalog: <https://catalog.uvu.edu/>

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**Semester:** Spring

**Course Prefix:** CHEM

**Course Title:** Physical Chemistry 2 Lab

**Year:** 2025

**Course and Section #:** 3075 201

**Credits:** 4

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### *Course Description*

This course explores principles and concepts introduced in CHEM 3070 and beyond. It teaches design and execution of physical chemistry experiments and interpretation of the observations. It uses physical chemistry experiments to solve physical chemistry problems.

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### *Course Attributes*

This course has the following attributes:

- General Education Requirements
- Global/Intercultural Graduation Requirements
- Writing Enriched Graduation Requirements
- Discipline Core Requirements in Program
- Elective Core Requirements in Program
- Open Elective

Other: *Click here to enter text.*

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### *Instructor Information*

**Instructor Name:** Dr. Kevin Shurtleff, PS-009b, 801-360-9799 , [kshurtleff@uvu.edu](mailto:kshurtleff@uvu.edu)

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### *Student Learning Outcomes*

Here are the course learning outcomes.

- Measure the chemical and physical properties of chemical systems, including determining thermodynamic and kinetic values.
- Synthesize and test chemical devices, including electrochemical and quantum devices.
- Use spectroscopic instruments to characterize chemical systems.
- Demonstrate the ability to design experiments, manipulate scientific equipment, make measurements, and interpret physical chemistry experiments.
- Demonstrate written and oral communication of chemical information.

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## ***Course Materials and Texts***

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## ***Course Requirements***

### **Course Assignments, Assessments, and Grading Policy**

Lab Instructions: Uploaded to the "Files" section of Canvas throughout the semester.

Lab Notebook: Any notebook, including electronic notebooks (use at your own risk) for recording lab results and observations.

Calculator: No specific model recommended: however, it should have memory, scientific notation capability, and log/ln functions. It can be on your smartphone.

Safety Glasses: Must meet OSHA requirements for chemical splash protection (Does not need to be goggles)

Thumb Drive: A thumb drive is required to save data collected during experiments. You will not have access to the instruments outside of class.

Access to a computer with Microsoft Excel, Word or equivalent software is required. You need access to Excel or equivalent software to analyze data, prepare graphs, and do calculations. You need access to Word or equivalent software to prepare lab reports.

Access to an internet connected, video and audio capable computer running Microsoft Teams (free download for students) is required.

Computers are available for use across campus.

I will use the following grading scheme for this class:

Lab participation (attendance )	30%
Lab reports	70%

The final grade for the class will be assigned as follows.

A	93.33%
A-	90.00%
B+	86.67%
B	83.33%
B-	80.00%
C+	76.67%
C	73.33%

C-	70.00%
D+	66.67%
D	63.33%
D-	60.00%
E	<60%
E	3 Absences or more

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### **Required or Recommended Reading Assignments**

Lab instructions on Canvas

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### **General Description of the Subject Matter of Each Lecture or Discussion**

**Lab 0 – Safety and course overview**

Lab 1 – MnO<sub>2</sub> supercapacitor

Lab 2 – pXRF

Lab 3 – Mn-doped quantum dots

Lab 4 – Photophysics of 2-naphthol

Lab 5 – NMR

Lab 6 – Rovibrational spectrum analysis of I<sub>2</sub>

Lab 7 – FTIR equilibria between hydrogen-bonded species

Lab 8 – Carbon-carbon battery

Lab 9 – New Lab

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### ***Required Course Syllabus Statements***

#### **Generative AI**

AI programs are not a replacement for your human creativity, originality, and critical thinking. Writing, thinking, and researching are crafts that you must develop over time to develop your own individual voice. At the same time, you should learn how to use AI and in what instances AI can be helpful to you.

The use of generative AI tools (e.g. ChatGPT, Google Bard, etc.) is permitted in this course for the following activities:

Brainstorming and refining your ideas;

Fine tuning your research questions;

Finding information on your topic;

Drafting an outline to organize your thoughts; and

Checking grammar and style.

The use of generative AI tools is **NOT** permitted in this course for the following activities:

Impersonating you in classroom contexts, such as by using the tool to compose discussion board prompts/responses assigned to you or content that you put into a Teams/Canvas chat.

Completing group work that your group has assigned to you, unless it is mutually agreed upon that you may utilize the tool.

Writing a draft of a writing assignment.

Writing entire sentences, paragraphs or papers to complete class assignments.

You are responsible for the information you submit based on an AI query (for instance, that it does not violate intellectual property laws, or contain misinformation or unethical content). Your use of AI tools must be properly documented and cited in order to stay within university policies on academic honesty.

Any student work submitted using AI tools should clearly indicate what work is the student's work and what part is generated by the AI. In such cases, no more than 25% of the student work should be generated by AI. If any part of this is confusing or uncertain, please reach out to me for a conversation before submitting your work.

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### **Using Remote Testing Software**

This course does not use remote testing software.

This course uses remote testing software. Remote test-takers may choose their remote testing locations. Please note, however, that the testing software used for this may conduct a brief scan of remote test-takers' immediate surroundings, may require use of a webcam while taking an exam, may require the microphone be on while taking an exam, or may require other practices to confirm academic honesty. Test-takers therefore shall have no expectation of privacy in their test-taking location during, or immediately preceding, remote testing. If a student strongly objects to using test-taking software, the student should contact the instructor at the beginning of the semester to determine whether alternative testing arrangements are feasible. Alternatives are not guaranteed.

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## ***Required University Syllabus Statements***

### **Accommodations/Students with Disabilities**

Students needing accommodations due to a permanent or temporary disability, pregnancy or pregnancy-related conditions may contact UVU [Accessibility Services](#) at [accessibilityservices@uvu.edu](mailto:accessibilityservices@uvu.edu) or 801-863-8747.

Accessibility Services is located on the Orem Campus in BA 110.

Deaf/Hard of Hearing students requesting ASL interpreters or transcribers can contact Accessibility Services to set up accommodations. Deaf/Hard of Hearing services can be contacted at [DHHservices@uvu.edu](mailto:DHHservices@uvu.edu)

DHH is located on the Orem Campus in BA 112.

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### **Academic Integrity**

At Utah Valley University, faculty and students operate in an atmosphere of mutual trust. Maintaining an atmosphere of academic integrity allows for free exchange of ideas and enables all members of the community to achieve their highest potential. Our goal is to foster an intellectual atmosphere that produces scholars of integrity and imaginative thought. In all academic work, the ideas and contributions of others must be appropriately acknowledged and UVU students are expected to produce their own original academic work.

Faculty and students share the responsibility of ensuring the honesty and fairness of the intellectual environment at UVU. Students have a responsibility to promote academic integrity at the university by not participating in or facilitating others' participation in any act of academic dishonesty. As members of the academic community, students must become familiar with their [rights and responsibilities](#). In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, assessments, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Likewise, instructors are responsible to clearly state expectations and model best practices.

Further information on what constitutes academic dishonesty is detailed in [UVU Policy 541: Student Code of Conduct](#).

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### **Equity and Title IX**

Utah Valley University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, age (40 and over), disability, veteran status, pregnancy, childbirth, or pregnancy-related conditions, citizenship, genetic information, or other basis protected by applicable law, including Title IX and 34 C.F.R. Part 106, in employment, treatment, admission, access to educational programs and activities, or other University benefits or services. Inquiries about nondiscrimination at UVU may be directed to the U.S. Department of Education's Office for Civil Rights or UVU's Title IX Coordinator at 801-863-7999 – [TitleIX@uvu.edu](mailto:TitleIX@uvu.edu) – 800 W University Pkwy, Orem, 84058, Suite BA 203.

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### **Religious Accommodation**

UVU values and acknowledges the array of worldviews, faiths, and religions represented in our student body, and as such provides supportive accommodations for students. Religious belief or conscience broadly includes religious, non-religious, theistic, or non-theistic moral or ethical beliefs as well as participation in religious holidays, observances, or activities. Accommodations may include scheduling or due-date modifications or make-up assignments for missed class work.

To seek a religious accommodation, a student must provide written notice to the instructor and the Director of Accessibility Services at [accessibilityservices@uvu.edu](mailto:accessibilityservices@uvu.edu). If the accommodation relates to a scheduling conflict, the notice should include the date, time, and brief description of the difficulty posed by the conflict. Such requests should be made as soon as the student is aware of the prospective scheduling conflict.

While religious expression is welcome throughout campus, UVU also has a [specially dedicated space](#) for meditation, prayer, reflection, or other forms of religious expression.