

**Student Syllabus for Chemistry 339**  
**Physical Chemistry Lab II**  
**Spring 2022**

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**Lab:** Tue., 11:00 AM -1:50 PM    **Location:** Chemistry Biology Building 476

**Text:**    **Required:** Garland, Nibler, and Shoemaker, “**Experiments in Physical Chemistry**”, 8<sup>th</sup> ed

- *ISBN-13: 978-0072828429*
- *ISBN-10: 0072828420*
- This is available for rental at the University Bookstore

Bound laboratory notebook A bound laboratory notebook with numbered pages solely used for CHEM 339 is required.

Scientific calculator (required)

**Office hours:**                    Mon. 2:00-3:00 PM  
    Wed. 4:00-5:00 PM  
    Thurs. 10:00-11:00 AM  
  
    By appointment

## **COURSE DESCRIPTIONS (CHEM 336: Physical Chemistry II)**

### **Description:**

1 credit (Three hours of lab per week).

- Extension of 335 with an emphasis on the utilization of spectroscopic methods to probe the electronic structure of atoms and molecules and the nuclear motions within molecules. Introduction to the use of lasers in spectroscopy and kinetics.

### **Prerequisites:**

CHEM 335 (Chemistry 248 and 326; Mathematics 222; Physics 250).

## **COURSE OBJECTIVES**

### **Course Learning Outcomes**

Students completing Chemistry 336 will be able to:

- (a) Use good record keeping in a laboratory notebook.
- (b) Perform laboratory experiments to probe and understand the quantum mechanical nature of matter.
- (c) Analyze experimental data using model systems.
- (d) Understand the working properties of scientific instrumentation in the physical chemistry laboratory.
- (e) Effectively communicate experimental results through written reports.

**METHODOLOGY:** The class is composed of one 3-hour lab period per week. Each student will rotate through a series of labs (1,2,3 and 4,5,6,7). Students will work in groups of two. The class is broken into two groups, Group A and Group B. Group A will perform labs during even weeks, and have workdays during odd weeks, while Group B will perform labs during odd weeks and have workdays during even weeks. The purpose of these workdays is to give you time to work on your lab reports while I am available to help you with any questions/problems that you might have. Due to overcrowding possibilities, you are not required to attend workday sessions, but I will be available for you to answer any questions you might have. The laboratory and due date schedules are detailed below.

**Attendance:** Attendance is expected as outlined in the UWSP Undergraduate Catalog. See the section about Attendance under Academic Policies.

**CANVAS:** Course information (e.g. supplementary lab information and handouts) will be posted daily on CANVAS. It is your responsibility to visit the site daily. You can log into CANVAS at: <http://www.uwsp.edu/Canvas/Pages/default.aspx>

**Lab reports:** A lab report is due *for each lab performed*, making a total of 8 reports. There is no formal lab report. Instead, reports consist of a brief introduction, experimental data provided in tabular format, any collected spectra or plots with proper titles, axis labels, units, etc., and answers to any questions that were provided on CANVAS. Lab due dates are provided in the schedule below.

**Make-up policy:** There will be **NO** unexcused make-ups of any labs.

**Final Exam:** There is no final exam.

**Grading:** Your final grade will be based on the following point system:

Lab reports :	$8 \times 125$ points	=	1000 points (100%)
Total:	<u><math>8 \times 125</math> points</u>	=	1000 points (100%)

% Total Points	Grade	% Total Points	Grade
$\geq 93\%$	A	$\geq 73\%$	C
$\geq 90\%$	A-	$\geq 70\%$	C-
$\geq 87\%$	B+	$\geq 67\%$	D+
$\geq 83\%$	B	$\geq 63\%$	D
$\geq 80\%$	B-	$< 63\%$	F
$\geq 77\%$	C+		

**Lab policies:**

You are expected to be at class on time.

Attendance is covered in the Methodology section above.

You are responsible for reading the lab to be performed as well as any supplementary material *before* arriving in lab. Failure to read any and all pertinent material will result in your removal from that week's lab. You will not be given the opportunity to make up any of the missed material/labwork.

UWSP is committed to providing reasonable and appropriate accommodations to students with disabilities and temporary impairments. If you have a disability or acquire a

condition during the semester where you need assistance, please contact the Disability and Assistive Technology Center on the 6<sup>th</sup> floor of Albertson Hall (library) as soon as possible. DATC can be reached at 715-346-3365 or [DATC@uwsp.edu](mailto:DATC@uwsp.edu).

Bring your text, a calculator, and lab notebook to every class.

You are responsible for checking your e-mail and CANVAS daily.

Any submitted work *must be your own*. You may work with other students, but each student will submit his/her own unique lab report. **Copying is unacceptable. Any such assignments will not be accepted and will receive a score of zero points.**

Please turn all cell phones to vibrate before class. No texting or iPods allowed. Laptops are for taking notes only. If I see you texting or using your laptops in an inappropriate manner I will give you one warning before asking you to leave the class. *Talking/texting etc. is inappropriate and will not be tolerated. It distracts other students and is rude.*

*You are responsible for working in the lab in a safe manner. This is for your safety, as well as the safety of others around you. If you are uncertain about anything in the laboratory, make sure to ask questions before attempting to perform the task in question.*

*Everyone working on the laser lab (Raman spectra of simple chlorinated compounds) is responsible for wearing laser goggles any time a laser is in operation.*

Treat all fellow students with respect and civility. Failure to do so will result in your dismissal from that day's lab.

### **Academic Honesty/Plagiarism Policy:**

All work to be graded should be your own work, and not copied from any other person. Any instances of plagiarism or cheating will be dealt with in accordance with the UWSP Chapter 14 rules on Academic Misconduct. Any violations will result in a zero for that assignment/exam. A second violation results in an F for a final grade in the class.

### **Accommodation of Persons with Disabilities:**

The Americans with Disabilities Act (ADA) is a federal law requiring educational institutions to provide reasonable accommodations for students with disabilities. If you have a disability and require classroom or exam accommodation, please register with the Disabilities Services office and then contact me within the first two weeks of the semester. In order to receive accommodations, you must have documentation of your disability on file with the Office of Disability Services. In addition, you must provide me with an Accommodations Request Form (available on their website). You must have me sign the form and return it to the Office of Disability Services.

## **University Policy on Absence to Observe Religious Holidays**

It is UW System policy to reasonably accommodate your sincerely held religious beliefs with respect to all exams 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 me within the first three weeks of the beginning of classes of the specific days or dates that you will request relief from an examination or academic requirement.
- I will accept the sincerity of your religious beliefs at face value and keep your request confidential.
- I 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.

**Tentative Course Outline**  
(Subject to change)

Week	Day	Date	Group A Lab	Group A Due	Group B Lab	Group B Due
1	Tue	25-Jan	Checkin	×	Checkin	×
2	Tue	1-Feb	Lab 1/2/3	×	Workday	×
3	Tue	8-Feb	Workday	Lab 0	Lab 1/2/3	×
4	Tue	15-Feb	Lab 2/3/1	Lab 1/2/3	Workday	Lab 0
5	Tue	22-Feb	Workday	×	Lab 2/3/1	Lab 1/2/3
6	Tue	1-Mar	Lab 3/1/2	Lab 2/3/1	Workday	×
7	Tue	8-Mar	Workday	×	Lab 3/1/2	Lab 2/3/1
8	Tue	15-Mar	Lab 4/5/6/7	Lab 3/1/2	Workday	×
×	Tue	22-Mar	SPRING BREAK	NO CLASS	SPRING BREAK	NO CLASS
9	Tue	29-Mar	Workday	×	Lab 4/5/6/7	Lab 3/1/2
10	Tue	5-Apr	Lab 7/4/5/6	Lab 4/5/6/7	Workday	×
11	Tue	12-Apr	Workday	×	Lab 7/4/5/6	Lab 4/5/6/7
12	Tue	19-Apr	Lab 6/7/4/5	Lab 7/4/5/6	Workday	×
13	Tue	26-Apr	Workday	×	Lab 6/7/4/5	Lab 7/4/5/6
14	Tue	3-May	Lab 5/6/7/4	Lab 6/7/4/5	Workday	×
15	Tue	10-May	Workday	×	Lab 5/6/7/4	Lab 6/7/4/5
×	Tue	17-May	×	Lab 5/6/7/4	×	Lab 5/6/7/4

Please note, the last day to drop without a grade is Wednesday, 2/2, and the last day to drop a course is Fri., 4/8.

**Lists of Labs**  
(Subject to change)

Lab	Title	Shoemaker Lab	Supplementary Information
0	Latex Elastomers and Euler's Chain	×	See CANVAS
1	Heat of Vaporization and Liquid-Vapor Equilibrium	×	See CANVAS
2	Equilibrium Constant for the Dissociation of N <sub>2</sub> O <sub>4</sub>	×	See CANVAS
3	Heat of Combustion and Bomb Calorimetry	Exp. 6	See CANVAS
4	Absorption spectrum of a conjugated dye	Exp. 34	See CANVAS
5	Ro-vibrational spectra of HCl and DCl	Exp. 37	See CANVAS
6	Raman spectra of simple chlorinated compounds	Exp. 36	See CANVAS
7	Absorption spectrum of gaseous iodine	Exp. 40	See CANVAS