

 FLORIDA ATLANTIC UNIVERSITY	COURSE CHANGE REQUEST Undergraduate Programs		UUPC Approval <u>11-4-24</u> UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	Department Chemistry and Biochemistry College Science		
Current Course Prefix and Number CHM 3411L		Current Course Title Physical Chemistry 2 Lab	
Syllabus must be attached for ANY changes to current course details. See Template . Please consult and list departments that may be affected by the changes; attach documentation.			
Change title to: Change prefix From: _____ To: _____ Change course number From: _____ To: _____ Change credits* From: _____ To: _____ Change grading From: _____ To: _____ Change WAC/Gordon Rule status** Add <input type="checkbox"/> Remove <input type="checkbox"/> Change General Education Requirements*** Add <input type="checkbox"/> Remove <input type="checkbox"/> <small>*See Definition of a Credit Hour.</small> <small>**WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to this form. See WAC Guidelines.</small> <small>***GE criteria must be indicated in syllabus and approval attached to this form. See Intellectual Foundations Guidelines.</small>		Change description to: A series of experiments in molecular spectroscopy and quantum chemistry designed to accompany the theory covered in Physical Chemistry 2. Students utilize modern instrumental and computational techniques to explain the properties of molecular systems using the principles of quantum mechanics. Change prerequisites/minimum grades to: Change corequisites to: Change registration controls to: Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade (default is D-).	
Effective Term/Year for Changes: Fall 2024		Terminate course? Effective Term/Year for Termination:	
Faculty Contact/Email/Phone Tito Sempertegui / tsempert@fau.edu / 561-297-2508			
Approved by Department Chair <u>Andrew Teresh's</u> College Curriculum Chair <u>[Signature]</u> College Dean <u>[Signature]</u> UUPC Chair <u>Korey Sorge</u> Undergraduate Studies Dean <u>Dan Meeroff</u> UFS President _____ Provost _____		Date 9-27-24 10/25/24 <u>10-24-24</u> 11-4-24 11-4-24 _____ _____	

Email this form and syllabus to mjenning@fau.edu seven business days before the UUPC meeting.

CHM3411L – PHYSICAL CHEMISTRY 2 LABORATORY

Department of Chemistry and Biochemistry

SPRING 2025

2 Credit Hours

Thursdays 2-5:50pm

Contact Information:

Instructor: Dr. Erin Williams

Office: PS 301B

Office Hours: Fridays 11 AM-12 PM, starting Friday (1/26), and by appointment

Phone Number: 561-297-0304

Email: ewilli93@fau.edu

TA contact information:

Hunter Gaenz

hgaenz2013@fau.edu

COURSE DESCRIPTION

A series of experiments in molecular spectroscopy and quantum chemistry designed to accompany the theory covered in Physical Chemistry 2. Students utilize modern instrumental and computational techniques to explain the properties of molecular systems using the principles of quantum mechanics.

INSTRUCTIONAL METHOD

In-Person.

CO-REQUISITE

CHM 3411, Physical Chemistry 2 (lecture course)

COURSE OBJECTIVES

Students will gain experience in connecting physical theories and models with observed chemical phenomena. They will develop an appreciation for the qualitative assumptions and limitations of models and the quantitative ability of the models to predict observed chemical phenomena. Students will gain hands-on experience with modern instrumentation and learn how to conduct experiments in physical chemistry and properly collect, analyze, and present data.

REQUIRED TEXTS & MATERIALS

In this course, all laboratory guides and pre-lab information you will need will be posted on the Canvas course website.

Supplementary/Recommended Readings:

“Physics Chemistry”, by Peter Atkins, Julio de Paula, and James Keeler, 11th edition, Oxford University Press, 2018, ISBN 978-0-19-876986-6.

COURSE ASSESSMENTS, ASSIGNMENTS & GRADING POLICY

GRADING CRITERIA

Students are required to complete five experiments, each worth a maximum of 200 points.

Your course total out of a maximum 1000 points will be converted to an overall percentage.

The following grade scale will be used:

Grade	Weight (%)
A	100 % – 93.0 %
B	< 93.0 % – 83.0 %

C	< 83.0 % – 73.0 %
D	< 73.0 % – 60.0 %
F	< 60.0 %

Plus/minus grades may also be awarded at the Professor's discretion. The above criteria may be lowered but will not be raised after the final analysis of the total scores for the class.

POLICY ON ATTENDANCE, MAKEUPS, LATE WORK, AND INCOMPLETES

Summary of Grade Penalizations:

Late submissions of a lab report will incur an immediate 20% deduction and a further 20% deduction for every elapsed 12-hour period following the deadline (this includes weekends and holidays). For example, for a lab report submitted at 9am on Friday when it was due the previous day at 2:00pm, this report will incur a deduction of 40%. The report will be graded as normal and then 40% of the score received will be deducted to give the final score of the report.

A deduction of up to 100% of the experiment grade and possibly an "F" for the course may be enforced for the following offenses, depending on their severity and number (note: no warnings are required, but may be given):

1. Unsafe lab practices including not wearing safety glasses/goggles and endangering your health/life and the health/life of others.
2. Deliberate reckless treatment or handling of laboratory equipment.
3. Cheating, plagiarism, or falsifying results will not be tolerated (according to the FAU code of academic integrity, see below).

Please note that if you are found guilty of plagiarism or copying from other students or if you allow others to copy your work or if you are found guilty of making up data, you will be penalized and as a minimum you will receive a zero for any experiment containing the plagiarized/copied or falsified data, however, depending on the offense you could receive an "F" for the course.

The severity of the penalty and any other disciplinary action deemed appropriate is at the sole discretion of the Professor.

Attendance Policy:

If you are absent for an extended period of time, preventing you from submitting a lab report in a timely fashion, a makeup opportunity may be granted only in the following cases (the student must provide documentation): 1. Medical emergency or problem, 2. Death in the immediate family, 3. Participation in an FAU-sponsored academic or athletic activity/event, 4. Required appearance in a civil or criminal court, 5. Religious holiday. In cases 1-2, the student or a family member must notify the Professor of the problem via email within 48 hours of the missed lab session. The student will meet with the Professor and provide documentation at the earliest possible time (ordinarily within 1 week of the originally scheduled due date). In cases 3-5 above, written documentation of the impending activity must be submitted to the Professor at least 48 hours prior to the scheduled date of absence. The grades for all experiments in this course have a component based on satisfactory performance in the lab and the acquisition of satisfactory experimental results. It is not acceptable for your lab partner to perform an experiment in your absence. If you are absent for an experiment without a valid reason you will obtain a zero for the experiment. The TA and Professor will be monitoring student laboratory attendance and participation closely.

Change of Grade Policy:

If a student disagrees with an experiment grade that they receive, they must act upon it within 5 days (including weekends and holidays) after the score for the experiment has been posted on Canvas. The procedure to obtain a review of the grade for an experiment is as follows: the student must first email the TA that graded the report and try to resolve it with them; if a resolution is not found, they may email the Professor within 48 hours of the meeting with the TA to request a review by the Professor and explain why a review is being sought for the particular experiment; a follow-up meeting/discussion may be appropriate, but an email must be sent first. Any re-grading of a report is final and cannot be reverted.

Incomplete Grade:

The "I" grade is used only when a student was passing a course but was unable to complete some portion of the work assigned to all students as a regular part of the course. The incomplete work must be compelled by some external and unforeseen circumstance such as illness or death in the family. It is not to be used to allow students to do extra work subsequently to raise the grade earned during the regular term or to repeat the whole course for a better grade. All Incomplete grades must be resolved prior to certification for graduation.

COURSE POLICIES

CODE OF ACADEMIC INTEGRITY POLICY STATEMENT

Students at Florida Atlantic University should endeavor to maintain the highest ethical standards. Academic dishonesty is a serious breach of these ethical standards because it interferes with the University mission to provide a high-quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive to the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see [University Regulation 4.001](#).

PLAGIARISM

[Plagiarism](#) is unacceptable in the University community. Academic work must be an original work of your own thought, research, or self-expression. When students borrow ideas, wording, or organization from another source, they must acknowledge that fact in an appropriate manner. Plagiarism is the deliberate use and appropriation of another's work without identifying the source and trying to pass off such work as one's own. Any student who fails to give full credit for ideas or materials taken from another has plagiarized. This includes all posts, written, and oral presentation assignments.

CLASSROOM ETIQUETTE POLICY

- No student may work in a lab unless a TA or the Professor is present.
- Safety glasses/goggles and long-sleeved lab coats must be worn at all times and students must be properly attired in the laboratory – you will be asked to leave if you fail to wear your safety glasses or come to the lab inadequately attired. (Regular prescription glasses are NOT an adequate substitute.)
- No eating, drinking, or smoking is permitted in the laboratory. (This means no food or drinks are brought into the lab or stored in the lab.)
- No student may perform an unauthorized experiment.
- Be attentive to your experiment. Never leave an experiment in progress unattended.
- Wipe up spilled chemicals and bottle rings immediately including all liquid drops and solid crystals. Dispose of all waste chemicals in the proper waste bottles provided.
- Report all accidents immediately to your TA or Professor.
- Keep your lab bench and common areas clean and organized.
- Do not leave the lab until your bench, the hoods and the lab are clean and tidy.

COMMUNICATION POLICY

Announcements

You are responsible for reading all announcements posted by either the Professor or the TA. Check the course announcements each time you log in.

Email/Video Conferencing

You are responsible for reading all your course email and responding in a timely manner.

Course-Related Questions Policy

Except weekends and holidays, the Professor/TA will generally answer questions within 48 hours.

Electronic Communication Policy

In addition to the University's policy, please consider the following:

- Privacy, confidentiality, and security in all electronic communications.
- All electronic communication resources must be used for the course and in alignment with to the University mission.
- Prohibited use of false identity, false identity pseudonyms, or anonymous (sender's name or electronic identification is hidden).
- Access without consent.
- Disruption of services including introducing computer contaminants (viruses).
- Harassment of any kind.

Please see the Office of Information Technology's policies on [Cyber Security Awareness](#).

SUPPORT SERVICES & ONLINE RESOURCES

- [Center for eLearning and Student Success](#)
- [Counseling and Psychological Services](#)
- [FAU Libraries](#)
- [Freshmen Academic Advising Services](#)
- [Math Learning Center](#)
- [Office of Information Technology Helpdesk](#)
- [Office of International Programs and Study Abroad](#)
- [Office of Undergraduate Research and Inquiry](#)
- [Student Accessibility Services](#)
- [University Center for Excellence in Writing](#)

FACULTY RIGHTS & RESPONSIBILITIES

Florida Atlantic University respects the rights of instructors to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede their exercise.

To ensure these rights, faculty members have the prerogative to:

- Establish and implement academic standards.
- Establish and enforce reasonable behavior standards in each class.
- Recommend disciplinary action for students whose behavior may be judged as disruptive under the *Student Code of Conduct*.

SELECTED UNIVERSITY & COLLEGE POLICIES

Attendance Policy

Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations, or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances, and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

Counseling and Psychological Services (CAPS) Center

Life as a university student can be challenging physically, mentally, and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

Accessibility Policy Statement

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodations to properly execute coursework due to a disability, must register with Student Accessibility Services (SAS) located in the Boca Raton, Davie, and Jupiter campuses and follow all SAS procedures. For additional information, please consult [Student Accessibility Services](#).

Contact

- **Boca Raton:** (561) 297-3880
Fax: (561) 297-2184, TTY: 711
- **Davie:** (954) 236-1222
Fax: (954) 236-1123, TTY: 711
- **Jupiter:** (561) 799-8721
Fax: (561) 799-8721, TTY: 711

Final Grade Appeal Process

You may request a review of the final course grade when you believe that one of the following conditions apply:

- There was a computational or recording error in the grading.
- The grading process used non-academic criteria.
- There was a gross violation of the instructor's own grading system.

[Chapter 4 of the University Regulations](#) contains information on the grade appeals process.

Religious Accommodation Policy Statement

In accordance with rules of the Florida Board of Education and Florida law, students have the right to reasonable accommodations from the University in order to observe religious practices and beliefs regarding admissions, registration, class attendance, and the scheduling of examinations and work assignments. For further information, please see [Academic Policies and Regulations](#).

University Approved Absence Policy Statement

In accordance with rules of the Florida Atlantic University, students have the right to reasonable accommodations to participate in University approved activities, including athletic or

scholastics teams, musical and theatrical performances, and debate activities. It is your responsibility to notify the instructor at least one week prior to missing any course assignment.

Drops/Withdrawals

You are responsible for completing the process of dropping or withdrawing from a course. Please click on the following link for more information on dropping and/or withdrawing from a course. Please consult the [FAU Registrar Office](#) for more information.

The instructors reserve the right to adjust this syllabus as necessary.

Course Topical Outline

Students must complete the five experiments listed below. You may complete the experiments in any order that you wish and at the pace you choose. However, to ensure that you remain on track to complete all of your work by the end of the semester, you are required to have at least two reports submitted by the first submission deadline and all five experiment reports submitted by the second submission deadline. Please use the Instrument Booking Sheet (will be posted as a Google Document) to reserve the required instrument for the desired timeslot. You may initially book an instrument for only ONE timeslot. Please note that it is your responsibility to use the time that you have reserved. If you have run out of time you must step aside for the next pair of students regardless of whether you have finished your experiment. You may then reserve the equipment for another available timeslot to complete it.

Experiments

- I. Rotational fine structure in vibrational spectra: FTIR of SO₂ and CO₂ (Thermo-Nicolet iS10 FTIR)
- II. Visible absorbance spectroscopy of a series of conjugated dyes (Genosys 10S UV-Vis)
- III. Vibrational fine structure in an electronic spectrum: Visible absorbance of iodine (PE Lambda 850 UV-Vis)
- IV. Polarized Raman spectroscopy of a series of chlorinated alkanes (XploRa)
- V. Synthesis and characterization of CdS quantum dots (Fume hood, week 1; PE Spectrofluorometer, week 2)

Due Dates for Reports

All reports must be prepared and submitted in Canvas as a **single pdf file**. All text and graphs in your report must be prepared with a word processor and graphing software such as Excel or Origin. Handwritten text or pictures are not allowed. Lab report grade penalties apply for any non-compliance to these rules.

First submission deadline: at least two experiment reports must be submitted no later than **March 18th at 11:59pm**

Second and FINAL submission deadline: the remaining three experimental reports must be submitted no later than **April 19th at 11:59pm**

Please note: the last day to perform experimental work is Thursday, April 18th.

Pre-Lab:

The experiment guides are posted in Canvas and should be read carefully and fully prior to attempting the experiment. The guides for each experiment should include a short series of pre-lab questions that are designed to test your understanding of the experiment prior to attempting it. The pre-lab questions must be completed, signed, and dated by a TA or the Professor prior to you beginning the experiment. The TA or Professor will decide whether you are properly prepared for the experiment. Signed/dated Pre-Labs must be submitted with the rest of your lab report and will be graded along with the rest of the lab report. Note: A handwritten pre-lab is not acceptable. All of it must be prepared with a computer.

Laboratory Sessions:

At the first laboratory session in week 2 of the semester, students will choose a lab partner. Experimental work will begin in week 3 (1/25). When you have completed data collection for an experiment, the primary experimental data must be verified and signed/dated by a TA or the Professor and will be submitted with your lab report.

Experiment Lab Reports:

Experimental work is conducted in pairs, but the written report must be your own individual work. **Written reports must be fully produced with a computer, not handwritten.** This includes all text and figures in the report. Follow the instructions in the guide for each experiment. Your report for each experiment will consist of your signed/dated pre-lab and signed/dated primary experimental data at the beginning of the report. The remainder of your report will then consist of your response to each of the questions in the guide in numerical



order (appearing as lowercase Roman numerals). **Lab reports must be submitted in Canvas as a single electronic portable document format (pdf) file.** Email submission of your report as an attachment is unacceptable. The signed pre-lab and signed raw experimental data pages must be scanned and included in the electronic pdf file that you upload to the appropriate Canvas assignment box. The student is solely responsible for the successful and timely submission to Canvas. Failure to abide by any of these rules may lead to grade deductions for the report, which is at the sole discretion of the Professor.