

 FLORIDA ATLANTIC UNIVERSITY	COURSE CHANGE REQUEST Undergraduate Programs	UUPC Approval <u>3/25/24</u> UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	Department Chemistry and Biochemistry College Science	
Current Course Prefix and Number CHM 3411	Current Course Title Physical Chemistry 2	
<i>Syllabus must be attached for ANY changes to current course details. See <u>Template</u>. Please consult and list departments that may be affected by the changes; attach documentation.</i>		
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 <u>Definition of a Credit Hour</u>.</small> <small>**WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to this form. See <u>WAC Guidelines</u>.</small> <small>***GE criteria must be indicated in syllabus and approval attached to this form. See <u>Intellectual Foundations Guidelines</u>.</small>	Change description to: Introduction to Quantum Chemistry - Description of quantum mechanics (QM) and Schrodinger equation, application of QM to rotational/vibrational motions and electronic spectroscopy, utilization of QM to describe atomic/molecular orbitals, structures, and bonding. 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 Teent'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 <u>3/4/2024</u> <u>3/13/24</u> <u>3/13/24</u> <u>3/25/24</u> <u>3/25/24</u> _____ _____	

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

CHM 001 10724 - Physical Chemistry 2

CHM 3411 (Fall 2024)

Physical Chemistry 2

TR (Tuesday/Thursday) 12:30 PM – 1:50 PM
3 credits

Prof. Ilyas Yildirim

Office (Jupiter): MC17, Room 224

Temp Office (Boca): PS-340

Office hours: 2-3 PM (Tuesday); PS-340

Classroom: Sanson Life Sciences (SC-119)

Telephone: 561-799-8325

Email: iyildirim@fau.edu

Website: <https://cescos.fau.edu/~iyildirim/>

Teaching Assistant: Hunter Gaenz (hgaenz2013@fau.edu)

Office Hours: 11am-12pm (Tuesdays)

Office: PS-238 (Roche Lab)

Course Description

Introduction to Quantum Chemistry - Description of quantum mechanics (QM) and Schrodinger equation, application of QM to rotational/vibrational motions and electronic spectroscopy, utilization of QM to describe atomic/molecular orbitals, structures, and bonding.

Instructional Method

This class is designated 'Primarily Classroom'. Attendance in person is required.

Prerequisites/Corequisites

Prerequisite: CHM 3410, Physical Chemistry 1 (D-).

Co-requisite: CHM 3411L, Physical Chemistry 2 Lab.

Course Objectives/Student Learning Outcomes

The aim is for the student to develop core knowledge and especially conceptual understanding of the foundations of quantum theory and how it is used to describe the states and optical spectra of atoms and molecules. Conceptual understanding is demonstrated by: i) Successfully applying core ideas to situations that

are novel to the student, ii) Reasoning about core ideas using skills that go beyond mere rote memorization or algorithmic problem solving, iii) Expanding situational knowledge to predict and/or explain behavior of chemical systems, iv) Demonstrating the critical thinking and reasoning involved in solving problems, and v) Being able to translate across the macroscopic, microscopic, and symbolic domains of quantum theory.

Course Evaluation Method

The course grade will be based on in-class examinations and homework assignments as described below:

Exam 1 20%

Exam 2 20%

Homework 30%

Final Exam 30%

All grades will be posted on Canvas.

Course Schedule

There will be 28 class periods in total and a final exam. Tentative exam dates are as follows:

Midterm Exam 1: Tuesday, February 13 (12:30pm- 1:50pm)

Midterm Exam 2: Thursday, March 21 (12:30pm- 1:50pm)

Final Exam: Thursday, April 25 (10:30am-1:00pm)

Exams 1 & 2 are non-cumulative and 80 min in duration. The Final Exam will be cumulative (i.e., comprehensive) and 150 min in duration. The dates of exams are subject to change. Any changes will be announced via Canvas and/or email by the Professor. The exams will test material covered in class as well as assigned homework and reading. All course content, whether covered in class or out of class as assigned homework, should be considered equally relevant to the exams unless otherwise specified by the Professor.

Homework Assignments

Homework assignments will generally consist of assigned problem sets to be completed by specified dates. There will be at least 10 homework sets. Homework Assignments must be handed in as a hardcopy at the beginning of class (12:30 pm) on the due date. Late submission of homework assignments will incur an immediate -40% penalty and a further -20% for each elapsed 12-hour period thereafter (including weekends). The submission of different portions of a homework assignment at different times is not allowed.

Course Grading Scale

A 93.0-100%

A- 89.0-92.9%

B+ 85.0-88.9%

B 81.0-84.9%

B- 78.0-80.9%

C+ 75.0-77.9%

C 72.0-74.9%

C- 69.0-71.9%

D+ 66.0-68.9%

D 63.0-65.9%

D- 60.0-62.9%

F 0-59.9%

Policy on Makeup Tests, Late Work, and Incompletes

Attendance is required. Students must attend all scheduled sessions.

Students with 3 or more unexcused absences will automatically earn the “F” grade for the course. Students are **strongly** encouraged to work together to exchange ideas and practice skills taught in the lectures.

An excused absence requires appropriate documentation for either (1) participation in university approved activities or (2) health reasons.

The grade will be calculated according to the “**Course Evaluation Method**” described above. Any complaints about the exams should be addressed within 5 days of the grades published in CANVAS. No complaints can be made after this period.

Students are responsible for showing all the work in the exams. No assumptions can be made.

Clear handwriting is a must. It is the student's responsibility to show the work explicitly.

Homeworks are due on a timely manner as requested by the instructor.

Missing homeworks will result in ‘zero’ points.

Makeup. A make-up exam will not be given unless a written and verifiable reason is approved either prior to or within 48 hours of the deadline of the exam. If a student is unable to complete the required coursework for health or family reasons, an ‘incomplete’ mark **may** be issued.

Withdrawal. Please check the official FAU website regularly for the most up to date information on the last day to withdraw without a “W” & last day to withdraw without an “F” grade.

Incomplete Grade Policy. Please refer to the FAU Undergraduate Catalog for the policy on “I” grades.

Classroom Etiquette Policy

University policy on the use of electronic devices states: “In order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular telephones and pagers, are to be disabled in class sessions.”

The use of cell phones or other communication devices for talking or texting is disruptive and is therefore prohibited during class. A ringing or vibrating phone is just as bad, turn it off before class begins.

Students are permitted to use personal computers during class for note-taking and other class-related work only.

No food, drinks, chewing gum, snacks or similar items are permitted in class.

Bringing in visitors to the computer lab is not acceptable.

Policy on the Recording of Lectures

Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. Recording class activities other than class lectures, including but not limited to student presentations (whether individually or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct and/or the Code of Academic Integrity.

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 with 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/> **Disability Policy***

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/.

Code of Academic Integrity

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university's mission to provide a high-quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of 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](#).

Required Texts/Readings

“Atkins' Physical Chemistry 11e”, Peter Atkins, Julio de Paula, and James Keeler, Oxford University Press; 11th edition (February 28, 2018), ISBN-13: 978-0198769866, ISBN-10: 0198769865.

Supplementary/Recommended Readings

“Student Solutions Manual to accompany Atkins' Physical Chemistry 11th edition”, ISBN-13: 978-0198807773, ISBN-10: 9780198807773.

Student Responsibilities.

It is the student's responsibility to read the entire syllabus and understand the contents herein. This syllabus forms the rules and regulations by which you must abide. In addition, it is the student's responsibility to monitor, read and understand all emails and announcements and course documents that are posted on Canvas. Any corrections or additions to the syllabus will be emailed and/or posted on Canvas and are understood to be part of the syllabus. The Professor will adhere to and institute the syllabus rules and regulations. There will be no exceptions.

Course Topical Outline

Topics to be covered will include all or parts of the following chapters of the required textbook:

- Quantum Theory (Chapter 7)
- Atomic structure and spectra (Chapter 8)
- Molecular Structure (Chapter 9)
- Molecular Symmetry (Chapter 10)

This outline of course content is subject to change, depending on the progress of the class. The course material will likely be covered in the order shown but is also subject to change.