

 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 3410		Current Course Title Physical Chemistry 1
<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>. **WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to this form. See <u>WAC Guidelines</u>. ***GE criteria must be indicated in syllabus and approval attached to this form. See <u>Intellectual Foundations Guidelines</u>.</small>	Change description to: An Introduction to theories of the states of matter, thermodynamics, phase and chemical equilibria, electrochemistry, kinetics and factors affecting reactivity, and statistical thermodynamics. Change prerequisites/minimum grades to: Minimum grade of "C" in CHM 2211 and 8 credits of physics. 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 Terentis</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 mjenning@fau.edu seven business days before the UUPC meeting.

CHM 3410-001

Physical Chemistry 1

Fall 2024

TR 12:30 – 1:50 pm in GS-107

3 credits

CRN 10263

Prof. Andrew Terentis

Office: PS 110E

Office hours: MT 2pm-3pm, and by appointment

Telephone: 561-297-2406

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Course Description

An introduction to theories of the states of matter, thermodynamics, phase and chemical equilibria, electrochemistry, kinetics and factors affecting reactivity, and statistical thermodynamics.

Instructional Method

This class is designated “Primary Classroom”. Lectures will be delivered in the traditional inperson format unless otherwise directed by the Professor.

Prerequisites/Corequisites

Prerequisites: CHM 2211 and 8 credits of physics with C or better. Students may consult the Professor for special exemptions to these prerequisites.

Corequisite: CHM 3410L (Physical Chemistry 1 Lab).

Course Website

The course website in Canvas can be reached at <http://canvas.fau.edu>. Your username is the same as your FAUNet ID (go to <http://accounts.fau.edu> if you do not know this).

Course Objectives/Student Learning Outcomes

Physical chemistry provides the fundamental concepts, organizing principles, and mathematical framework underlying *all* areas of chemistry and related fields. Therefore, the student should develop a knowledge and appreciation for the connection between molecular theories and models with experimental observables, and to be able to critically apply these models and theories through problem solving, deepening their understanding of chemical phenomena.

Course Evaluation Method

Exams: The class will meet 30 times during the semester. A progress exam will be held on the 11th and 21st class period, and a final exam will be held on the 30th class period. The exam schedule is as follows:

- Exam 1, Tuesday, September 26th
- Exam 2, Tuesday, October 31st
- Final Exam, Thursday, December 7th (10:30 am to 1:00 pm)

Exams 1 & 2 are non-cumulative and 80 min in duration. The Final Exam is cumulative (i.e., comprehensive) and 150 min in duration.

Quizzes: A series of short quizzes will be given throughout the semester on days which *may not* be announced beforehand. If you are absent for a quiz without a valid excuse (see below, policy on make ups) you will not be granted a makeup.

Homework Assignments: The Professor will assign homework consisting of problem sets throughout the semester. Homework Assignments must be submitted in Canvas as a single pdf document by the due date/time posted in Canvas. Emailed homework is not acceptable. Late submission of homework assignments will incur an immediate -20% penalty and a further -10% for each elapsed 12-hour period thereafter (including weekends). Any handwritten homework assignment that is judged to be too untidy to grade or illegible will be returned without grading.

Contention of grades: Contention of a grade for any exam, quiz or homework assignment must be raised with the Professor within **48 hours** of the time that the grade is initially posted in Canvas. An appointment with the Professor may be made (if necessary) to discuss the issue. All grades are considered FINAL after this meeting or 48-hour period and will not be discussed further.

Course Grading Scale

The overall course grade is based on the total points earned from the following assessment exercises:

Progress Exam 1	= 100
Progress Exam 2	= 100
Final Exam	= 200
Quizzes and Homework	= 200
Total Points	= 600

Each quiz and HW assignment may not contribute the same amount of points toward the final grade. This will be decided by the Professor at the end of the semester. The criteria for final course grades are based on the following total percentages: **93.0% = A; 83.0% = B; 73.0% = C; 63.0% = D; <60.0% = F**. Final total percentages will be calculated to one decimal place and there will be no further rounding. Thus, 93.0% or higher will earn a grade of A, 83.0% a B, etc.

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

Warning: the automatically calculated course total in the Canvas gradebook is usually wrong and should not be trusted as a true indication of your grade for the class. The correct grade must be calculated with each assessment item properly weighted as described above. If you want to know your grade accurately you should meet with the Professor during office hours to discuss it.

Policy on Makeup Tests, Late Work, and Incompletes

There will be no make-up exams or quizzes except in the following cases, where a student has not already sat the exam/quiz AND can provide appropriate 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 incident via email within 48 hours of the missed exam/quiz. The student will provide documentation and take the makeup exam/quiz at the *earliest possible time* (ordinarily within 1 week of the originally scheduled exam/quiz time). In cases 3-5, written documentation of the impending activity must be submitted to the Professor at least 48 hours *prior to* the scheduled exam/quiz time. The student must take the makeup exam within 1 week of the originally scheduled exam/quiz time.

Incomplete Grade: The "I" grade is used only when a student was passing a course but then 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 a death in 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. The Professor is required to enter an "I" in the Registrar's grading system and note the work that must be completed for a final grade, the time frame for completion, and the grade that will be assigned if the work is not completed. *It is the student's responsibility to arrange with the Professor the timely completion of this work.* All Incomplete grades must be resolved prior to certification for graduation.

Special Course Requirements

Not applicable.

Classroom Etiquette Policy

Please arrive at the classroom *before* class begins to avoid interruptions. Cell phones should be switched off. Thoughtful, courteous questions and discussion about the course material during class time are encouraged. If you have specific questions or comments about your own learning experience you may speak with the Professor individually about this outside of class times.

Policy on the Recording of Lectures

Students enrolled in this course may record 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 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 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 nonattendance. 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/>

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 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](#).

Plagiarism: Plagiarism involves presenting the work of someone else as though it were your own, that is, without properly acknowledging the source. Sources include published material and the unpublished work of other students. Plagiarism is a violation of academic integrity and will be dealt with according to the above Code of Academic Integrity.

Required Texts/Readings

“Physical Chemistry”, by Peter Atkins, Julio de Paula, and James Keeler, 11th edition, Oxford University Press, 2018, ISBN 978-0-19-876986-6. <https://global.oup.com>.

Supplementary/Recommended Readings

Student’s Solutions Manual for Atkins’ Physical Chemistry 11th edition.

Course Topical Outline

- Properties of gases (Focus 1), wks 1-2
- First law of thermodynamics (Focus 2), 2A-2C wks 3-4, 2D-2E wks 5-6
- Chemical kinetics (Topics 17A, 17B, 17C, 17E, 17F), wks 7-9
- Second and third laws of thermodynamics (Focus 3), wks 10-11
- Chemical potential and activities (Topics 5A & 5F), wk 11-12
- Chemical equilibrium (Topics 6A & 6B), wk 12-13
- Arrhenius equation and the activated complex (Topic 17D), wk 13
- Collision theory (Topic 18A), wk 14
- Partition functions & Transition State Theory (Topics 13A, 13B & 18C), wk 15

The Professor may change this course topical outline at any time during the semester. Any changes will be announced in class.