

CHEM 210 Chemical Applications of Calculus and Physics Fall 2022

Lecture: Monday 1:00 – 1:50 PM

Room: GMCS-328

Instructor: Dr. Karen Peterson
Office: CSL-309 Phone: 594-4507
e-mail: kpeterson@sdsu.edu

Office hours (Peterson) Zoom: Monday, Wednesday 8:00 -9:00 pm.

Meeting ID: 853 0948 6202

<https://SDSU.zoom.us/j/85309486202>

Course Description

CHEM 210. Chemical Applications of Calculus and Physics (1)

Chemical problems that utilize calculus and physics relevant to upper division chemistry. Chemical rate laws, chemical thermodynamics, and molecular quantum mechanics. Required if a grade of C- (1.7) or below was received in Mathematics 150, 151, 252, Physics 195, or 196.

Overview

In this course, we will review and work on the mathematical concepts found in Chem 410A Physical Chemistry. It is intended to be taken concurrently with Chem 410A so that relevant mathematical ideas can be studied in a timely manner. Some of the topics that I expect to cover are listed below, but any mathematical or physical concepts that you feel need extra work will be considered.

Sketching functions
Differentiation
Integration
Complex numbers
Vectors
Matrices
Potential energy functions
Polar/spherical coordinates
Expectation values

Gaussian functions
Angular momentum
Taylor's series expansions

LEARNING OUTCOMES:

By the end of the course, you will be able to do the following:

- Connect mathematical relationships to physical phenomena in chemistry.
- Solve elementary derivatives and integrals in the context of chemical problems.
- Work through calculus problems found specifically in physical chemistry
- Visualize and draw mathematical functions used in quantum chemistry
- Estimate values of physical properties to be solved in a problem to check validity of calculations.
- Identify the formulas and/or principles from mathematics and physics needed to solve a word problem in physical chemistry

Grading

The grading for this course will be based on attendance and participation. There are a total of 13 meeting times and the grades will be given as follows.

Days attending/ participating	Grade	Days attending/ participating	Grade
11-13	A	5	C
10	A-	4	C-
9	B+	3	D+
8	B	2	D
7	B-	1	F
6	C+		

The last day of class in Chem 210 is Monday, Dec. 5. There will not be a final in Chem 210.

Add/Drop Procedure: The add/drop deadline is Sept 2, 2022. For details, see http://arweb.sdsu.edu/es/registrar/schedule_adjustment.html (Links to an external site.)

Students with Disabilities:

If you are a student with a disability and believe you will need accommodations for this class, it is your responsibility to contact Student Disability Services at (619) 594-6473. To avoid any delay in the receipt of your accommodations, you should contact Student Disability Services as soon as possible. Please note that accommodations are not retroactive, and that I cannot provide accommodations based upon disability until I have received an accommodation letter from Student Disability Services. Your cooperation is appreciated.