Enquiry for Course Details

CHEM1044 Mathematics in chemistry (6 credits)		Academic Year	2023
Offering Department	Chemistry	Quota	80
Course Co-ordinator	Dr A M Y Yuen, Chemistry < maiyan@hku.hk >		
Teachers Involved	(Dr A M Y Yuen,Chemistry) (Dr J Yang,Chemistry) (Dr. J Z Liu,Chemistry)		
Course Objectives	Mathematical calculations are necessary to explore important concepts in chemistry. This course aims to equip students with a basic knowledge of some of the mathematics that will be used in courses covered in the Chemistry-major curriculum to enable them to apply the mathematical skills to problems in chemistry. Students taking this course are expected to already have achieved level 2 or above in Module 1 or Module 2 of HKDSE Mathematics or equivalent, or a pass in MATH1011 University Mathematics I. As far as possible, the mathematical concepts covered in this course will be put in the context of chemical problems.		
Course Contents & Topics	Applying mathematical tools, such as Algebra, Trigonometry, Calculus, Complex number, Vector, Matrix, Linear equation, Differential equation, in solving chemistry problems.		

Course Learning Outcomes

On successful completion of this course, students should be able to:

CLO 1	demonstrate knowledge and understanding of the essential mathematics used in chemistry
CLO 2	apply mathematical skills to solve basic problems in chemistry
CLO 3	be more capable of coping with a higher level of mathematics required in relevant courses for chemistry major, in particular, in physical chemistry courses

Pre-requisites (and Co-requisites and Impermissible combinations)	Pass in CHEM1042 or already enrolled in this course; and Level 2 or above in Module 1 or Module 2 of HKDSE Mathematics or equivalent, or Pass in MATH1011 or SCNC1111
Course Status with Related Major/Minor /Professional Core	2023 Major in Chemistry (Intensive) (Disciplinary Elective) 2022 Major in Chemistry (Intensive) (Disciplinary Elective) 2021 Major in Chemistry (Intensive) (Disciplinary Elective) 2020 Major in Chemistry (Intensive) (Disciplinary Elective) 2019 Major in Chemistry (Intensive) (Disciplinary Elective)
Course to PLO Mapping	2023 Major in Chemistry (Intensive) < PLO 1,2,4,5 > 2022 Major in Chemistry (Intensive) < PLO 1,2,4,5 > 2021 Major in Chemistry (Intensive) < PLO 1,2,4,5 > 2020 Major in Chemistry (Intensive) < PLO 1,2,4,5 > 2019 Major in Chemistry (Intensive) < PLO 1,2,4,5 >

Offer in 2023 - 2024	Y 2nd sem	Examination	May
Offer in 2024 - 2025	Y		
Course Grade	A+ to F		

Grade Descriptors

A	Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.
B	Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.
C	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.
D	Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.
Fail	Demonstrates poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.

Course Type	Lecture-based course

Course Teaching & Learning Activities

Activities	Details	No. of Hours
Lectures		36
Tutorials		12
Reading / Self study		100

Assessment Methods and Weighting

Methods	Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping
Assignments		20	CLO 1,2,3
Examination		50	CLO 1,2,3
Test	mid-term test	30	CLO 1,2,3

Required/recommended reading and online materials	Graham Doggett, Martin Cockett: Maths for Chemists, 2nd Edition, RSC Erich Steiner: The Chemistry Maths Book, 2nd Edition, Oxford University Press

Course Website	
Additional Course Information	