

Enquiry for Science Major/Minor/Programme Requirements

CHEM4441 Advanced organic chemistry (6 credits)		Academic Year	2022
Offering Department	Chemistry	Quota	40
Course Co-ordinator	Dr J He, Chemistry < jianhe@hku.hk >		
Teachers Involved	(Dr J He, Chemistry) (Dr Z X Huang, Chemistry)		
Course Objectives	To provide students with knowledge in organic chemistry reaction mechanisms and organic compound structure determination.		
Course Contents & Topics	The course covers chemical bonding, advanced stereochemistry, conformational analysis, techniques for investigating reaction mechanisms, reactive intermediates, rearrangement reactions, and pericyclic reactions.		
Course Learning Outcomes	On successful completion of this course, students should be able to:		
	CLO 1	describe, analyze and interpret the structure and reactivity relationship of organic molecules	
	CLO 2	identify and predict the selectivities (chemoselectivity, regioselectivity and stereoselectivity) in organic reactions	
	CLO 3	describe the general approaches to study organic mechanisms	
	CLO 4	have a general understanding and working knowledge of pericyclic reactions, reactive intermediates (radicals, carbenes and nitrenes), and polar rearrangements	
	CLO 5	suggest reasonable mechanistic pathways for some types of organic reactions	
	CLO 6	apply the knowledge of reaction mechanisms in design of synthetic routes for organic compounds	
Pre-requisites (and Co-requisites and Impermissible combinations)	Pass in CHEM3441		
Course Status with Related Major/Minor /Professional Core	2022 Major in Chemistry (Disciplinary Elective) 2022 Major in Chemistry (Intensive) (Disciplinary Elective) 2022 Minor in Chemistry (Disciplinary Elective) 2021 Major in Chemistry (Disciplinary Elective) 2021 Major in Chemistry (Intensive) (Disciplinary Elective) 2021 Minor in Chemistry (Disciplinary Elective) 2020 Major in Chemistry (Disciplinary Elective) 2020 Major in Chemistry (Intensive) (Disciplinary Elective) 2020 Minor in Chemistry (Disciplinary Elective) 2019 Major in Chemistry (Disciplinary Elective) 2019 Major in Chemistry (Intensive) (Disciplinary Elective) 2019 Minor in Chemistry (Disciplinary Elective) 2018 Major in Chemistry (Disciplinary Elective) 2018 Major in Chemistry (Intensive) (Disciplinary Elective) 2018 Minor in Chemistry (Disciplinary Elective)		
Course to PLO Mapping	2022 Major in Chemistry < PLO 1,2,5 > 2022 Major in Chemistry (Intensive) < PLO 1,2,5 > 2021 Major in Chemistry < PLO 1,2,5 > 2021 Major in Chemistry (Intensive) < PLO 1,2,5 > 2020 Major in Chemistry < PLO 1,2,5 > 2020 Major in Chemistry (Intensive) < PLO 1,2,5 > 2019 Major in Chemistry < PLO 1,2,5 > 2019 Major in Chemistry (Intensive) < PLO 1,2,5 > 2018 Major in Chemistry < PLO 1,2,5 > 2018 Major in Chemistry (Intensive) < PLO 1,2,5 >		
Offer in 2022 - 2023	Y	1st sem	Examination Dec
Offer in 2023 - 2024	Y		
Course Grade	A+ to F		
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations.	
	B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations.	
	C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations.	
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems.	
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems.	
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		25	CLO 1,2,3,4,5,6
	Examination		50	CLO 1,2,3,4,5,6
	Test		25	CLO 1,2,3,4,5,6
Required/recommended reading and online materials	F.A. Carey and R.J. Sunberg, "Advanced Organic Chemistry, Part-A: Structure and Mechanism", 5th Ed.: Springer, 2007. "Organic Chemistry", by Paula Y. Bruice, 2016, 8th Edition, Pearson, with e-text and Mastering Chemistry. I. Fleming, "Pericyclic Reactions", Oxford University Press, 1999.			
Course Website	NIL			
Additional Course Information	This course is also offered to RPg students, and the course code for RPg students is CHEM6114.			