

Enquiry for Course Details

CHEM3443 Organic chemistry laboratory (6 credits)		Academic Year	2021
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 Y F Wang, Chemistry)		
Course Objectives	To provide students with intensive hands-on training of experimental chemistry techniques on organic reactions; and the opportunity to develop analytical and critical thinking skills through scientific investigations in organic chemistry experiments. The course focuses on the practical aspects of a variety of organic reactions, including and multistep syntheses. Chromatographic, instrumental, and spectroscopic techniques are also discussed to give a holistic training of experimental organic chemistry.		
Course Contents & Topics	The course will include the following laboratory skills and practices: laboratory safety practice; preparation, purification, and characterization of organic compounds; gas and liquid chromatography; ultraviolet-visible spectrophotometry; infrared spectroscopy; NMR spectroscopy and melting point determination		
Course Learning Outcomes	On successful completion of this course, students should be able to:		
	CLO 1	demonstrate a good practice of laboratory safety and exercise proper procedures for safe handling and usage of chemicals	
	CLO 2	carry out, record and analyze the results of chemical experiments	
	CLO 3	apply modern instrumentation techniques to characterize organic compounds and draw conclusions from the results	
	CLO 4	communicate the results of their work to others	
	CLO 5	demonstrate problem-solving skills, critical thinking and analytical reasoning	
Pre-requisites (and Co-requisites and Impermissible combinations)	Pass in CHEM2441; and pass in CHEM3441, or already enrolled in this course; NOT for students who have passed CHEM3441A in semester 1, 2015-16, or CHEM3441 in or before 2014-2015 (for students admitted in 2014-15 or before) Pass in CHEM2441 or CHEM2442 or CHEM2443; and Pass in CHEM3441 or CHEM3442, or already enrolled in any of these two courses (for students admitted in 2015-16 or thereafter)		
Course Status with Related Major/Minor /Professional Core	2021 Major in Chemistry (Core/Compulsory) 2021 Major in Chemistry (Intensive) (Core/Compulsory) 2021 Minor in Chemistry (Disciplinary Elective) 2020 Major in Chemistry (Core/Compulsory) 2020 Major in Chemistry (Intensive) (Core/Compulsory) 2020 Minor in Chemistry (Disciplinary Elective) 2019 Major in Chemistry (Core/Compulsory) 2019 Major in Chemistry (Intensive) (Core/Compulsory) 2019 Minor in Chemistry (Disciplinary Elective) 2018 Major in Chemistry (Core/Compulsory) 2018 Major in Chemistry (Intensive) (Core/Compulsory) 2018 Minor in Chemistry (Disciplinary Elective) 2017 Major in Chemistry (Core/Compulsory) 2017 Major in Chemistry (Intensive) (Core/Compulsory) 2017 Minor in Chemistry (Disciplinary Elective)		
Course to PLO Mapping	2021 Major in Chemistry < PLO 1,2,3,4,5 > 2021 Major in Chemistry (Intensive) < PLO 1,2,3,4,5 > 2020 Major in Chemistry < PLO 1,2,3,4,5 > 2020 Major in Chemistry (Intensive) < PLO 1,2,3,4,5 > 2019 Major in Chemistry < PLO 1,2,3,4,5 > 2019 Major in Chemistry (Intensive) < PLO 1,2,3,4,5 > 2018 Major in Chemistry < PLO 1,2,3,4,5 > 2018 Major in Chemistry (Intensive) < PLO 1,2,3,4,5 > 2017 Major in Chemistry < PLO 1,2,3,4,5 > 2017 Major in Chemistry (Intensive) < PLO 1,2,3,4,5 >		
Offer in 2021 - 2022	Y	1st sem	2nd sem
		Examination	Dec May
Offer in 2022 - 2023	Y		
Course Grade	A+ to F		

Grade Descriptors	A	Demonstrate extensive knowledge and thorough command of concepts and principles which are required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Competently conduct experiment with efficient lab skills and techniques. Critically appraise data to draw appropriate and insightful conclusions. Apply highly effective organizational and presentational skills.		
	B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show substantial grasp and mastery of the subject knowledge. Demonstrate evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Show effective lab skills and techniques and critical analysis of experimental data. Apply effective organizational and presentational skills.		
	C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show general but incomplete grasp of the subject knowledge. Demonstrate evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Show moderately effective lab skills and techniques. Demonstrated some ability to analyze experimental data critically. Apply moderately effective organizational and presentational skills.		
	D	Demonstrate partial but limited command of knowledge and skills required for attaining course learning outcomes. Ability to recall some of factual information of the subject. Show a partial comprehension of basic concepts and principles and weak ability to apply them. Demonstrate evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Demonstrate partially effective lab skills and techniques. Apply limited or barely effective organizational and presentational skills.		
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Show evidence of little or no grasp of the knowledge and understanding of the subject. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Demonstrate minimally effective or ineffective lab skills and techniques. Organization and presentational skills are minimally effective or ineffective.		
Course Type	Lecture with laboratory component course			
Course Teaching & Learning Activities	Activities	Details	No. of Hours	
	Laboratory	12 x 4-hr lab sessions	48	
	Tutorials		12	
	Reading / Self study		100	
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping
	Examination	(20% practical exam and 30% 2-hr written exam)	50	CLO 1,2,3,4,5
	Laboratory reports	(Include Lab Quiz 15%, Lab Report and Notebook 25% and Lab Performance 10%)	50	CLO 1,2,3,4,5
Required/recommended reading and online materials	John W. Lehman: Operational Organic Chemistry - A Problem-Solving Approach to the Laboratory Course (Pearson, latest edition)			
Course Website	NIL			
Additional Course Information	Laboratory classes are mandatory. Students must complete ALL experiments and laboratory reports to pass this course.			