

Enquiry for Course Details

CHEM3141 Environmental chemistry (6 credits)		Academic Year	2020								
Offering Department	Chemistry	Quota	100								
Course Co-ordinator	Dr Y X Li, Chemistry < yxpli@hku.hk >										
Teachers Involved	(Dr W T Chan, Chemistry) (Dr Y X Li, Chemistry)										
Course Objectives	This course introduces students to Environmental Chemistry and enables them to understand the chemical principles involved in various environmental phenomena and processes.										
Course Contents & Topics	Atmosphere chemistry: atmospheric composition and behavior, ozone in the stratosphere, chemistry of the troposphere, air pollution Water Chemistry: property of water, water resources and cycle, chemical quality of natural water, acid-base chemistry, oxidation-reduction chemistry, water purification Organic pollutants: persistent organic pollutants, pesticides, toxicology Energy: energy resources, fossil fuels, solar energy, nuclear energy, energy conversion (heat engine, fuel cells) Waste treatment: domestic and hazardous waste treatment (landfill, incineration, air stripping, adsorption, oxidation)										
Course Learning Outcomes	On successful completion of this course, students should be able to: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">CLO 1</td> <td>demonstrate knowledge on chemical principles of the various environmental phenomena and processes</td> </tr> <tr> <td>CLO 2</td> <td>describe the practical processes of chemistry in atmosphere, water purification, waste treatment, and energy production</td> </tr> <tr> <td>CLO 3</td> <td>critically discuss local and global environmental issues based on scientific principles and data</td> </tr> <tr> <td>CLO 4</td> <td>apply knowledge to analyze chemical processes involved in various environmental problems</td> </tr> </table>			CLO 1	demonstrate knowledge on chemical principles of the various environmental phenomena and processes	CLO 2	describe the practical processes of chemistry in atmosphere, water purification, waste treatment, and energy production	CLO 3	critically discuss local and global environmental issues based on scientific principles and data	CLO 4	apply knowledge to analyze chemical processes involved in various environmental problems
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CLO 2	describe the practical processes of chemistry in atmosphere, water purification, waste treatment, and energy production										
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CLO 4	apply knowledge to analyze chemical processes involved in various environmental problems										
Pre-requisites (and Co-requisites and Impermissible combinations)	Pass in CHEM2041 or CHEM2341 or CHEM2441 or CHEM2442 or CHEM2541										
Course Status with Related Major/Minor /Professional Core	2020 Major in Environmental Science (Disciplinary Elective) 2020 Minor in Chemistry (Disciplinary Elective) 2020 Minor in Environmental Science (Disciplinary Elective) 2019 Major in Environmental Science (Disciplinary Elective) 2019 Minor in Chemistry (Disciplinary Elective) 2019 Minor in Environmental Science (Disciplinary Elective) 2018 Major in Environmental Science (Disciplinary Elective) 2018 Minor in Chemistry (Disciplinary Elective) 2018 Minor in Environmental Science (Disciplinary Elective) 2017 Major in Environmental Science (Disciplinary Elective) 2017 Minor in Chemistry (Disciplinary Elective) 2017 Minor in Environmental Science (Disciplinary Elective) 2016 Major in Environmental Science (Disciplinary Elective) 2016 Minor in Chemistry (Disciplinary Elective) 2016 Minor in Environmental Science (Disciplinary Elective)										
Course to PLO Mapping	2020 Major in Environmental Science < PLO 1,2,3,4 > 2019 Major in Environmental Science < PLO 1,2,3,4 > 2018 Major in Environmental Science < PLO 1,2,3,4 > 2017 Major in Environmental Science < PLO 1,2,3,4 > 2016 Major in Environmental Science < PLO 1,2,3,4 >										
Offer in 2020 - 2021	Y 2nd sem	Examination	May								
Offer in 2021 - 2022	Y										
Course Grade	A+ to F										

Grade Descriptors	A	- Demonstrate thorough grasp of the subject. - Demonstrate integration of the full range of appropriate theories, principles, and evidence. - Show evidence of strong analytical abilities, logical and independent thinking, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. - Demonstrate highly effective organization and presentation skills.		
	B	- Demonstrate substantial grasp of the subject. - Demonstrate general integration of theories, principles, and evidence. - Show evidence of analytical abilities and logical thinking, some evidence of independent thinking, and ability to apply knowledge to familiar and some unfamiliar situations. - Demonstrate effective organization and presentation skills.		
	C	- Demonstrate general but incomplete grasp of the subject. - Demonstrate some partial integration of theories, principles, and evidence. - Show evidence of some analytical abilities and logical thinking, little evidence of independent thinking, and ability to apply knowledge to most familiar situations. - Demonstrate moderately effective organization and presentation skills.		
	D	- Demonstrate partial but limited grasp, with retention of some relevant information, of the subject. - Demonstrate limited integration of theories, principles, and evidence. - Show evidence of limited analytical abilities, little or no evidence of independent thinking, and limited ability to apply knowledge to solve problems. - Demonstrate limited or barely effective organization and presentation skills.		
	Fail	- Demonstrate little or no grasp of the knowledge and understanding of the subject. - Demonstrate little or inapt integration of theories, principles, and evidence. - Show little or no evidence of analytical abilities, logical and independent thinking, and very little or no ability to apply knowledge to solve problems. - Demonstrate incoherent organization and poor presentation skills.		
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	(poster presentation)	40	CLO 1,2,3,4
	Examination		60	CLO 1,2,3,4
Required/recommended reading and online materials	C. Baird and M. Cann: Environmental Chemistry, Freeman, latest edition. S.E. Manahan: Environmental Chemistry, Lewis Publishers, latest edition.			
Course Website	NIL			
Additional Course Information	NIL			

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