Enquiry for Course Details

CHEM3242 Food and water analysis (6 credits)		Academic Year	2023
Offering Department	Chemistry	Quota	50
Course Co-ordinator	Dr K K H Ng, Chemistry < kkhn3@hku.hk >		
Teachers Involved	(Dr K K H Ng,Chemistry)		
Course Objectives	To cover areas in the application and new methodology development in analytical chemistry with focus on food and water analysis.		
Course Contents & Topics	Chemical Analysis in Practicing Laboratories: Use of standard methods, guidelines and standards for food and water analysis; good laboratory practice; reliability and quality issues in chemical analysis. Food Analysis: Requirement of nutritional labeling; determination of food nutritional value (e.g. total protein content, sodium content); detection of food adulteration and contamination (e.g. presence of banned additives, toxins, undeclared components); recent issues and case studies in food analysis. Water Analysis: Water quality standards; sampling, pretreatment, storage of water samples; theory and technologies for field, laboratory and automated analysis of selected types of water (e.g. drinking water, recreational water, waste water). Analytical Method Development: Selection, application and combination of analytical (e.g. sample digestion, solid phase extraction) and instrumental (e.g. GC, LC, MS) techniques for food and water analysis; method validation (e.g. recovery analysis, analysis of certified reference materials)		

Course Learning Outcomes	On successful completion of this course, students should be able to:
	CLO 1 — identify and communicate the importance of chemical analysis in ensuring food and water safety, and in safeguarding public health
	CLO 2 — describe and explain the working principles of the various analytical techniques in food and water analysis using both written and oral formats
	CLO 3 — analyse and present the strengths and limitations of various analytical techniques and select an appropriate, "fit-for-purpose" method
	CLO 4 — implement various analytical techniques used in practicing food and water laboratories
	CLO 5 — collect experimental data, perform subsequent analyses, interpret and present the results to peers using both written and oral formats

Pre-requisites (and Co-requisites and Impermissible combinations)	Pass in CHEM2241 or CHEM2341 or CHEM2441 or CHEM2541. Please note that School of Biological Sciences stipulates that students who have passed CHEM3242 are not allowed to take BIOL3209 Food and nutrient analysis.
Course Status with Related Major/Minor /Professional Core	2U000C00 Course not offered under any Major/Minor/Professional core 2023 Minor in Chemistry (Disciplinary Elective) 2022 Minor in Chemistry (Disciplinary Elective) 2021 Minor in Chemistry (Disciplinary Elective) 2020 Minor in Chemistry (Disciplinary Elective) 2019 Minor in Chemistry (Disciplinary Elective)
Course to PLO Mapping	

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

Grade Descriptors	A	Demonstrate through a thorough grasp of the knowledge and skills required in theory and laboratory work in food and water analysis to acquire accurate results with full interpretation for analytical application as described in all the course learning outcomes. Show strong analytical and critical abilities, logical thinking and capability to apply knowledge learnt to solve a wide range of complex issues and problems related to the analysis of food and water. Apply highly effective organization and presentation skills as shown in class work.
	B	Demonstrate a 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, logical thinking, and capability to apply knowledge learnt to solve a wide range of complex issues and problems related to the analysis of food and water. Apply effective organization and presentation skills as shown in class work.
	C	Demonstrate a general command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of analytical and critical abilities, logical thinking, and ability to apply knowledge learnt to solve a wide range of complex issues and problems related to the analysis of food and water. Apply effective organization and presentation skills as shown in class work.
	D	Demonstrate a partial but limited command of knowledge and skills required for attaining some of the course learning outcomes in Food and Water Analysis. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems related to the analysis of food and water. Apply limited or barely effective organization and presentation skill as shown in class work.
	Fail	Demonstrate little or no evidence for the 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 related to the analysis of food and water. Organization and presentation skills are minimally effective or ineffective as shown in class work.

Course Type	Lecture with laboratory component course

Course Teaching & Learning Activities	Activities	Details	No. of Hours
	Laboratory		16
	Lectures		24
	Tutorials		8
	Reading / Self study		100

Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping
	Assignments		10	CLO 1,2,3
	Examination		40	CLO 2,3,4
	Laboratory reports	(experiment & lab report)	20	CLO 1,2,4,5
	Presentation	(Project with presentation)	20	CLO 1,2,3,5
	Test		10	CLO 2,3,4

Required/recommended reading and online materials	D. A. Skoog, D. M. West, F. J. Holler, S. R. Crouch: Fundamentals of Analytical Chemistry (Cengage Learning, 10e) D. C. Harris, C. A. Lucy: Quantitative Chemical Analysis (W. H. Freeman, 10e) S. S. Nielsen (ed.): Food Analysis (Springer, 5e)
Course Website	NIL
Additional Course Information	Laboratory classes are mandatory. Students must complete ALL experiments and laboratory reports to pass this course.