

CHEM4022: ENVIRONMENTAL TOXICOLOGY

Effective Term

Semester A 2024/25

Part I Course Overview

Course Title

Environmental Toxicology

Subject Code

CHEM - Chemistry

Course Number

4022

Academic Unit

Chemistry (CHEM)

College/School

College of Science (SI)

Course Duration

One Semester

Credit Units

4

Level

B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

Nil

Equivalent Courses

BCH4022 Environmental Toxicology

Exclusive Courses

Nil

Part II Course Details

Abstract

In this course, students will:

- examine problems caused by various environmental toxicants and their fate
- be provided with practical experience in conducting in toxicity tests
- develop knowledge and techniques in the management of environmental toxicants

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Describe and evaluate the problems caused by various environmental toxicants and their fate in the environment				
2	Compare and contrast the various laboratory techniques used in quantitative assessment of environmental toxicants				
3	Critically evaluate, using case studies and group presentations, various management techniques adopted in the management of environmental toxicants				

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

LTAs		Brief Description	CILO No.	Hours/week (if applicable)
1	Group activities	Through large and small group activities, students will examine problems caused by various environmental toxicants and their fate in the environment	1	
2	Practical sessions	Through small group practical sessions, students will learn various laboratory techniques used in quantitative assessment of environmental toxicants. They will be able to experience these laboratory techniques themselves under guidance.	2	

3	Group activities, written assignments and presentations	Through large and small group activities, students will prepare written assignments, and deliver presentations related to various management techniques adopted in the management of environmental toxicants.	3	
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Assessment Tasks / Activities (ATs)

ATs		CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Tutorial Assignments and Quizzes	1, 3	50	Continuous Assessment (50%): - Tutorial Assignments and Quizzes - Group Presentations - Practicals
2	Group Presentations	3		
3	Practicals	2		

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

3

Additional Information for ATs

Starting from Semester A, 2015-16, students must satisfy the following minimum passing requirement for courses offered by CHEM: "A minimum of 40% in both coursework and examination components."

Assessment Rubrics (AR)**Assessment Task**

Tutorial Assignments and Quizzes

Criterion

Understanding of the topic and reading materials; correctness of interpretation and analysis of experimental data

Excellent (A+, A, A-)

Able to demonstrate excellent understanding of the topics and interpretation of experimental data.

Good (B+, B, B-)

Able to describe the topics and explain the experimental data.

Fair (C+, C, C-)

Able to describe some topics and explain some of the experimental data.

Marginal (D)

Able to briefly describe isolated topics and explain limited experimental data.

Failure (F)

Fail to describe the topics and explain the experimental data.

Assessment Task

Group Presentations

Criterion

Understanding of the topic and material; completeness of the presentation; logic of the presentation structure; clarity of talk; appropriate use of photos and figures in the illustration of concepts; ability to discuss the presented topic

Excellent (A+, A, A-)

Able to demonstrate excellent presentation based on the criteria.

Good (B+, B, B-)

Able to demonstrate good presentation based on the criteria

Fair (C+, C, C-)

Able to demonstrate satisfactory presentation based on the criteria

Marginal (D)

Able to demonstrate limited satisfactory presentation based on the criteria

Failure (F)

Fail to satisfy the criteria set for presentation

Assessment Task

Practicals

Criterion

Correctness of interpretation and analysis of experimental data; understanding of the topic and reading materials; application of knowledge in solving real life problems

Excellent (A+, A, A-)

Able to demonstrate excellent understanding of the topics and to apply knowledge in solving real life problems.

Good (B+, B, B-)

Able to demonstrate good understanding of the topics and to apply knowledge in solving real life problems.

Fair (C+, C, C-)

Able to demonstrate satisfactory understanding of the topics and to apply knowledge in solving real life problems.

Marginal (D)

Able to demonstrate limited satisfactory on the understanding of the topics and the application knowledge in solving real life problems.

Failure (F)

Fail to demonstrate the understanding of the topics and the application knowledge in solving real life problems.

Assessment Task

Examination

Criterion

Completeness and correctness of calculations/answers; correctness of interpretation and analysis of experimental data; application of knowledge in solving real life problems; logic of argumentation and intelligent use of course content/ original thinking

Excellent (A+, A, A-)

Able to demonstrate excellent ability in data interpretation, knowledge implementation, logic argumentation and original thinking.

Good (B+, B, B-)

Able to demonstrate good ability in data interpretation, knowledge implementation, logic argumentation and original thinking.

Fair (C+, C, C-)

Able to demonstrate satisfactory ability in data interpretation, knowledge implementation, logic argumentation and original thinking.

Marginal (D)

Able to demonstrate limited satisfactory ability in data interpretation, knowledge implementation, logic argumentation and original thinking.

Failure (F)

Fail to demonstrate satisfactory ability in data interpretation, knowledge implementation, logic argumentation and original thinking.

Part III Other Information**Keyword Syllabus**Environmental Toxicants and Their Fates

Types, sources, properties of environmental toxicants.
 Fate, effects and interaction of environmental toxicants.
 Bio-accumulation and bio-magnification.
 Carcinogenicity, mutagenicity and teratogenicity.
 Toxic mechanisms, dose-response relationship.
 Responses at various levels of biological organization.

Toxicity Tests and Bioassay

Qualitative and quantitative biological assessment of environmental toxicants including principles and objectives, concepts and terminology, methodology, test organisms, conducting the tests, data analysis and reporting.
 Use of test results for various environmental management purposes.

Management of Environmental Toxicants

International Conventions, National and Local Legislations.
 Case studies (Hong Kong, Regional and Global).

Reading List**Compulsory Readings**

Title	
1	Nil

Additional Readings

Title	
1	To be provided, as required, in lectures and tutorials.