

Course Syllabus

offered by Department of Chemistry
with effect from Semester B 2020/21

This form is for the completion by the *Course Leader*. The information provided on this form is the official record of the course. It will be used for the City University's database, various City University publications (including websites) and documentation for students and others as required.

Please refer to the Explanatory Notes on the various items of information required.

Prepared / Last Updated by:

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**City University of Hong Kong
Course Syllabus**

**offered by Department of Chemistry
with effect from Semester B 2020/21**

Part I Course Overview

Course Title:	Aquatic Ecology
Course Code:	CHEM4078 (and CHEM4078A)
Course Duration:	1 semester
Credit Units:	4 (3) credits
Level:	B4
Proposed Area: <i>(for GE courses only)</i>	<input type="checkbox"/> Arts and Humanities <input type="checkbox"/> Study of Societies, Social and Business Organisations <input type="checkbox"/> Science and Technology
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: <i>(Course Code and Title)</i>	Nil
Precursors: <i>(Course Code and Title)</i>	CHEM2067/BCH2067 Diversity of Life and Evolution and/or CHEM3068/BCH3068 General Ecology
Equivalent Courses: <i>(Course Code and Title)</i>	BCH4078 (and BCH4078A) Aquatic Ecology
Exclusive Courses: <i>(Course Code and Title)</i>	Nil

Note: CHEM4078A does not contain any practical component, and has a credit unit value of three (3).

Part II Course Details

1. Abstract

(A 150-word description about the course)

In this course, students will:

- explore the physical and chemical characteristics and processes, as well as biodiversity, of aquatic ecosystems;
- identify and examine biotic interactions and physical and/or chemical factors determining the community structure in aquatic habitats;
- review and evaluate contemporary issues related to human impacts on the aquatic ecosystems.

2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs [#]	Weighting* (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	A2	A3
1.	Describe and understand physical and chemical characteristics and processes, as well as the ecological structure, of aquatic ecosystems.	40%	✓	✓	
2.	Possess investigative skills in conducting scientific investigations on aquatic ecosystems and interpreting species interactions and their significance in the determination of community structure and patterns.	30%		✓	✓
3.	Able to critically evaluate the impact of human activities on the ecology of aquatic ecosystems.	30%		✓	✓
		100%			

* If weighting is assigned to CILOs, they should add up to 100%.

[#] Please specify the alignment of CILOs to the Gateway Education Programme Intended Learning outcomes (PILOs) in Section A of Annex.

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 self-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.

3. Teaching and Learning Activities (TLAs)
(TLAs designed to facilitate students' achievement of the CILOs.)

TLA	Brief Description	CILO No.			Hours/week (if applicable)
		1	2	3	
Lectures, tutorials, and quizzes	Students will learn to identify and describe factors determining the ecological characteristics of aquatic ecosystems through lectures, tutorials, and quizzes.	✓			Lecture (2 hrs), tutorials (0.5 hrs)
Group activities	Students will work in small groups and employ basic ecological techniques to discover physical, chemical and biological characteristics of aquatic ecosystems.		✓		3 hrs
Small group project	Students will design a small-scale laboratory/field study to investigate an ecological question in aquatic ecology		✓		1 hr
Group presentations/debates, investigation of the literature or other data	Through large and small group presentations/debates, investigation of the literature or other data, students will critically evaluate the impact of anthropogenic activities on aquatic ecosystems.			✓	

4. Assessment Tasks/Activities (ATs)
(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No.			Weighting*		Remarks
	1	2	3	CHEM4078	CHEM4078A	
Continuous Assessment: <u>50%</u>						
Short Quizzes	✓	✓		10	10	
Desktop reviews		✓	✓	--	20	(for CHEM4078 only)
Group Activities / Presentations/Debates			✓	10	20	
Laboratory / Field Investigation Reports		✓		20	--	(for CHEM4078 only)
Small group project		✓		10	--	
Examination: <u>50%</u> (duration: 3 hours)						
* The weightings should add up to 100%.				100%	100%	

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.”

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Short Quizzes	Understanding of the topic and reading materials; correctness of interpretation and analysis of the experimental data	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Desktop Reviews	Understanding and critical review of the topic and reading materials; clarity and organization of the essays; extensiveness and depth of the literature study	High	Significant	Moderate	Basic	Not even reaching marginal levels
3. Group Activities / Presentations/ Debates	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	High	Significant	Moderate	Basic	Not even reaching marginal levels
4. Laboratory / Field Investigation Reports, Small Group Project	Completeness and correctness of data interpretation and analysis; quality of experimental work and data collection; clarity and organization of report writing; quality and depth of discussion on experimental data	High	Significant	Moderate	Basic	Not even reaching marginal levels
5. Examination	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	High	Significant	Moderate	Basic	Not even reaching marginal levels

Part III Other Information (more details can be provided separately in the teaching plan)

1. Keyword Syllabus

(An indication of the key topics of the course.)

- Hydrological cycle
- Physiography of standing water and flowing water
- Ocean circulation, physical and chemical parameters
- Diversity of aquatic organisms
- Aquatic communities
- Species and community interactions
- Nutrient cycling and energy flow
- Water pollution, Ocean acidification, Marine debris
- Introduced species

2. Reading List

2.1 Compulsory Readings

(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

1.	
2.	
3.	
...	

2.2 Additional Readings

(Additional references for students to learn to expand their knowledge about the subject.)

1.	Ecology of Freshwater: Earth's Bloodstream, 5th edition. Moss, B.R. John Wiley & Sons, 2018.
2.	Freshwater Ecology: Principles and Applications. Jeffries, M., Mills, D. John Wiley and Sons, 1995.
3.	Marine Biology (Botany, Zoology, Ecology and Evolution). 10th edition. Castro, P., Huber, M.E. McGraw-Hill Education, 2015.
4.	The Biology of Rocky Shores (Biology of Habitats Series). 2nd edition. Little, C., Williams, G.A., Trowbridge, C.D. Oxford University Press, 2009.
5.	The Ecology of Sandy Shores. 3rd edition. McLachlan, A., Defeo, O. Academic Press, 2017.
6.	The Biology of Soft Shores and Estuaries (Biology of Habitats Series). 1st edition. Little, C. Oxford University Press, 2000.

A. Please specify the Gateway Education Programme Intended Learning Outcomes (PILOs) that the course is aligned to and relate them to the CILOs stated in Part II, Section 2 of this form:

GE PILO	Please indicate which CILO(s) is/are related to this PILO, if any <i>(can be more than one CILOs in each PILO)</i>
PILO 1: Demonstrate the capacity for self-directed learning	
PILO 2: Explain the basic methodologies and techniques of inquiry of the arts and humanities, social sciences, business, and science and technology	
PILO 3: Demonstrate critical thinking skills	
PILO 4: Interpret information and numerical data	
PILO 5: Produce structured, well-organised and fluent text	
PILO 6: Demonstrate effective oral communication skills	
PILO 7: Demonstrate an ability to work effectively in a team	
PILO 8: Recognise important characteristics of their own culture(s) and at least one other culture, and their impact on global issues	
PILO 9: Value ethical and socially responsible actions	
PILO 10: Demonstrate the attitude and/or ability to accomplish discovery and/or innovation	

GE course leaders should cover the mandatory PILOs for the GE area (Area 1: Arts and Humanities; Area 2: Study of Societies, Social and Business Organisations; Area 3: Science and Technology) for which they have classified their course; for quality assurance purposes, they are advised to carefully consider if it is beneficial to claim any coverage of additional PILOs. General advice would be to restrict PILOs to only the essential ones. (Please refer to the curricular mapping of GE programme: http://www.cityu.edu.hk/edge/ge/faculty/curricular_mapping.htm.)

B. Please select an assessment task for collecting evidence of student achievement for quality assurance purposes. Please retain at least one sample of student achievement across a period of three years.

Selected Assessment Task