

Course Syllabus

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

Part I Course Overview

Course Title:	Soil and Terrestrial Plant Ecology
Course Code:	CHEM4073 (and CHEM4073A)
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 CHEM3074/BCH3074 Plant Physiology and/or CHEM3068/BCH3068 General Ecology
Equivalent Courses: <i>(Course Code and Title)</i>	BCH4073 (and BCH4073A) Soil and Terrestrial Plant Ecology
Exclusive Courses: <i>(Course Code and Title)</i>	Nil

Note: CHEM4073A 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:

- Explain the biotic and abiotic factors affecting individual plants, plant populations and plant communities in their natural environments;
- Explore fundamental concepts of soil science, including properties and characteristics of soils, structure and functions of soil communities, and their roles in ecosystem processes such as nutrient cycling and carbon sequestration;
- Describe soil characteristics that provide habitat for plant roots and the interactions between primary production and the biological and physicochemical processes of soils.

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.	Discuss the relationships of terrestrial life (individual organisms, populations and communities) to biotic and abiotic factors in their environment.	30%	NA	NA	NA
2.	Design experimental protocol(s) on soil characteristics and how they interact to affect important ecosystem processes.	40%	NA	NA	NA
3.	Relate the interactions between soil functions and plant growth and production.	30%	NA	NA	NA
		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, quizzes, tutorials and practical classes	Students will learn to describe and discuss factors affecting the growth, production and distribution of terrestrial plants, through lectures, quizzes, tutorials and practical classes.	✓			
Group sessions, tutorial assignment, presentation and practical classes	Students in large and small group sessions, tutorial assignment and presentation and practical classes will learn to design experimental protocol(s) on soil formation, the biological and physicochemical properties of soil and their functions in biogeochemical cycling and carbon sequestration.		✓		
Group activities, written assignments, presentations and practical classes	Students will undertake large and small group activities, written assignments, presentations and practical classes to examine the interactions between soil function and primary production.			✓	

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	CHEM4073	CHEM4073A	
Continuous Assessment: <u>40%</u>						
Short Quizzes	✓	✓	✓	NA	NA	
Tutorial Assignments and Presentations		✓	✓	NA	NA	
Performance in Practical Classes and Practical Reports	✓	✓	✓	NA	--	(for CHEM4073 only)
Examination: <u>60%</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 experimental data	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Tutorial Assignments and Presentations	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
3. Performance in Practical Classes and Practical Reports	Correctness of interpretation and analysis of experimental data; understanding of the topic and reading materials; application of knowledge in solving real life problems	High	Significant	Moderate	Basic	Not even reaching marginal levels
4. Examination	Completeness and correctness of	High	Significant	Moderate	Basic	Not even reaching marginal levels

	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					
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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.)

- Introduction to soil and terrestrial plant ecology
- Populations, communities and biomes
- Factors affecting plant growth, production and distribution
- Herbivory and plant defence
- Biological and physicochemical properties of soil
- Global biogeochemical cycling
- Soil organic matter dynamics and carbon sequestration
- Primary production: plants, plant roots and rhizosphere
- Plant and soil interactions

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.	Schulze E.-D., Beck E. and Muller-Hohenstein K., 2005. Plant Ecology. Berlin; London; Springer.
2.	Gurevitch J., Scheiner S.M. and Fox G.A., 2006. The Ecology of Plants (2 nd ed.). Sunderland, MA : Sinauer).
3.	Whalen J. K. and Samperdro L., 2010. Soil Ecology and Management. Wallingford, UK; Cambridge, MA, CABI.
4.	Coleman D.C., Crossley D.A. Jr. and Hendrix P.F., 2004. Fundamental of Soil Ecology (2 nd ed.). Amsterdam; Boston : Elsevier Academic Press.
5.	Bardgett R.D., 2005. The Biology of Soil. Oxford University Press, NY.
6.	Online Resources: To be provided, as required, in lectures and tutorials.

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 (can be more than one CILOs in each PILO)
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