

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:	Diversity of Life and Evolution
Course Code:	CHEM2067
Course Duration:	1 semester
Credit Units:	3 credits
Level:	B2
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>	CHEM1200/BCH1200 Discovery in Biology (for normative 4-year students) or A Level Biology (for advance standing I students)
Precursors: <i>(Course Code and Title)</i>	Nil
Equivalent Courses: <i>(Course Code and Title)</i>	BCH2067 Diversity of Life and Evolution
Exclusive Courses: <i>(Course Code and Title)</i>	Nil

Part II Course Details

1. Abstract

(A 150-word description about the course)

In this course, students will:

- develop an understanding of the principles and importance of classification,
- develop an appreciation of Darwin's theory of evolution,
- examine the diversity of life in the Kingdoms Plantae and Animalia,
- explore the evolutionary relationships among various plant and animal groups as well as co-evolution of flowers and their pollinators,
- apply the knowledge of biological diversity to our daily life and culture.

This course will provide the basic knowledge on evolution and biodiversity of life, and prepare for elective courses e.g. Marine Biology, Animal Physiology, Plant Physiology.

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 the general principles of classification and binomial nomenclature for species naming.			✓	
2.	Explain Darwin's evidence on evolution and hypothesis of natural selection that produced the diversity of life on earth.			✓	
3.	Compare the diversity and characteristics of major groups of plants and animals including identification of local animal/plant species.		✓	✓	
4.	Apply the concepts of systematic zoology/botany to comprehend the evolutionary relationships among various plant and animal groups, and the co-evolution of flowers and their pollinators.		✓	✓	✓
5.	Discover the connection between our daily life, culture and biological diversity.				✓
		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	4	5	
Lectures and tutorial exercises	Teaching and learning will be based on a combination of lectures and tutorial exercises to explain the principles on classification and species naming.	✓					
Small group activities	Students will learn in small group activities, by examining Darwin's evidences on evolution and his hypothesis that natural selection produced the diversity of life on earth.		✓				
Lectures and group presentations	Through lectures and group presentations students will learn to identify, describe and report basic morphological characteristics of major groups of plants (non-vascular plants to seed plants) and animals (invertebrates and vertebrates).			✓			
Small group discussions, small projects and/or literature study	Concepts of adaptive radiation and convergent evolution in animals/plants as well as co-evolution of flowers and their pollinators will be examined through small group discussions, small projects and/or literature study.				✓		
Small group activities and group project report	Through small group activities and a group project report, students will discover the connection between biological diversity on food plates to our daily life and culture.					✓	

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	4	5		
Continuous Assessment: <u>40%</u>							
Quizzes	✓					5%	
Oral presentation / report		✓	✓		✓	20%	
Class and online discussion / assignment		✓		✓		15%	
Examination: <u>60%</u> (duration: 3 hours)							
* The weightings should add up to 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. Quizzes	Ability to explain biological concepts and their connection	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Oral presentation / report	Capacity for self-directed learning to comprehend and explain in detail with accuracy the concepts of diversity and evolution	High	Significant	Moderate	Basic	Not even reaching marginal levels
3. Class and online discussion / assignment	Ability to apply the knowledge of diversity and evolution in daily life	High	Significant	Moderate	Basic	Not even reaching marginal levels
4. Examination	Ability to explain and apply the concepts and principles of diversity and evolution	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.)

Principles of classification and binomial nomenclature

The three-domain and six-kingdom classification system, taxonomic hierarchy and binomial nomenclature.

Darwin's theory of evolution

Natural selection as the mechanism of evolution. Adaptive radiations of animals and plants.

Plant diversity and evolution

What is a plant? Green algae are the ancestors of land plants. Examine the diversity of life in the Kingdom Plantae, identify and describe basic morphological characteristics and reproductive strategies of various groups of non-vascular and vascular plants, identify common trees in Hong Kong. Examine the evidence of convergent evolution in plants. Explore the co-evolution of flowering plants and their animal pollinators.

Animal diversity and evolution

What is an animal? Examine the diversity of life in the Kingdom Animalia; identify and describe basic morphological characteristics of various groups of animals (invertebrates and vertebrates) and relate them to adaptations to the environment they are inhabiting (using local examples); examine adaptive radiations of animals and evolutionary relationships among various animal groups.

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.	Raven P.H., Johnson G.B., Losos J.B. and Singer S.R. (2005) Biology. 7 th edition. McGraw Hill, New York.
2.	Campbell N.A. and Reece J.B. (2005) Biology. 7 th edition. Pearson, Benjamin Cummings, San Francisco.
3.	Raven P.H., Evert R.F. and Eichhorn S.E. (2005) Biology of Plants. 7 th edition. Freeman, New York.
4.	Online Resources: To be provided, as required, in lectures and tutorials.

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.)

- A. 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