

**City University of Hong Kong
Course Syllabus**

**offered by Department of Biomedical Sciences
with effect from Semester A 2018/19**

Part I Course Overview

Course Title: Biology of Populations, Species and Ecosystems

Course Code: BMS2802

Course Duration: One Semester

Credit Units: 3 credits

Level: B2

Arts and Humanities

Proposed Area:
(for GE courses only)

Study of Societies, Social and Business Organisations

Science and Technology

Medium of Instruction: English

Medium of Assessment: English

Prerequisites:
(Course Code and Title) Nil

Precursors:
(Course Code and Title) Nil

Equivalent Courses:
(Course Code and Title) Nil

Exclusive Courses:
(Course Code and Title) Nil

Part II Course Details

1. Abstract

(A 150-word description about the course)

This course examines biological systems from the level of populations through species to ecosystems and complements the course in cell biology. Topics include the diversity of life, evolution, speciation, taxonomy, domestication, population ecology (demography, life tables, density-dependence, logistic growth, home ranges, patch dynamics and migration), community ecology (climate zones, energy flows, trophic levels, competition, dispersal, disturbance, predation, mutualism, parasitism), biogeography, environmental adaptations, and the impacts of human population growth and global environmental change. Although there is some consideration of aquatic organisms, plants, invertebrates and domesticated animals, there is an emphasis on free-living populations of wild-type terrestrial vertebrates to complement the “One Health” theme in the program as a whole.

The interaction between free living terrestrial vertebrate animals and their environment is addressed using an issue-based approach in order to explain how the ecology of terrestrial vertebrates has been shaped by evolution through interactions with their living and non-living environment. The course also demonstrates how we can understand and explain the significance of what we see in nature using scientific methods. A field course component provides the opportunity to investigate how the environment influences community composition, biodiversity and adaptive radiation in a variety of habitats. It is empirical, rather than theoretical and relies heavily on examples of actual environmental issues. Attendance at the field camp is compulsory.

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 diversity of life		✓		
2.	Describe the normal function of animal populations and their ecosystems and the major causes of perturbations in those ecosystems (AVBC)		✓		
3.	Explain that domestic animal populations are not isolated from free-living animal populations, adding a deeper perspective to the “One Health” concept.		✓		
4.	Review and critically evaluate literature (RCVS) relevant to the current status of an animal species			✓	
5.	Assimilate advances in knowledge and collect, organise and analyse information (AVBC) relevant to the current status of an animal species			✓	
6.	Capture then identify animals to species using appropriate keys, and utilise species information databases		✓	✓	✓
* If weighting is assigned to CILOs, they should add up to 100%.		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	6	
Lectures	Explain key concepts and theory of topics in the course	✓	✓	✓				2 hours/week
Group Project	Experimental learning of a ecological concerned topic with specific attention on hands-on activities.				✓	✓	✓	

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	6		
Continuous Assessment: <u>60%</u>								
Quiz	✓	✓	✓				10% * 2	
Project Plans and Reports	✓	✓	✓	✓	✓		20%	
Project and Field Performance					✓	✓	20%	
Examination: <u>40%</u> (duration: 3 hours)								
							100%	

* The weightings should add up to 100%.

"Minimum Passing Requirement" for BMS courses:

A minimum of 30% in coursework as well as in examination, in addition to a minimum of 40% in coursework and examination taken together.

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. Project Plans and Reports	Ability to design and carry out ecological study	Will exhibit high competence in design and carry out ecological study	Will exhibit good competence in design and carry out ecological study	Will exhibit basic competence in design and carry out ecological study	Will exhibit some deficiencies in design and carry out ecological study	Will exhibit lack of competence in design and carry out ecological study
2. Field Performance	Ability to utilize equipment and knowledge base for the study selected topic	Will exhibit high competence in utilize equipment and knowledge base for the study selected topic	Will exhibit good competence in utilize equipment and knowledge base for the study selected topic	Will exhibit basic competence in utilize equipment and knowledge base for the study selected topic	Will exhibit some deficiencies in utilize equipment and knowledge base for the study selected topic	Will exhibit lack of competence in utilize equipment and knowledge base for the study selected topic
3. Examination and Quiz	Ability to describe the normal composition and function of animal populations and their ecosystems and the major causes of perturbations in those ecosystems (AVBC)	Will exhibit high competence in understanding, explaining, and integrating the knowledge in written format	Will exhibit good competence in understanding, explaining, and integrating the knowledge in written format	Will exhibit basic competence in understanding, explaining, and integrating the knowledge in written format	Will exhibit some deficiencies in understanding, explaining, and integrating the knowledge in written format	Will exhibit lack of competence in understanding, explaining, and integrating the knowledge in written format

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.)

Diversity of life, evolution, speciation, taxonomy, domestication, population ecology, demography, life tables, density-dependence, logistic growth, home ranges, patch dynamics and migration, community ecology, climate zones, energy flows, trophic levels, competition, dispersal, disturbance, predation, mutualism, parasitism, biogeography, environmental adaptations, human population growth, global climate change.

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.	Mason, K., Losos, J., and Singer, S. (2014). <i>Biology, 10th edition</i> . McGraw-Hill, New York.
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2.2 Additional Readings

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

1.	Reece, J. <i>et al.</i> (2014). <i>Campbell's Biology</i> . Pearson, Melbourne.
3.	Chan, Kin-fung <i>et al.</i> (2006). <i>A field guide to the venomous land snakes of Hong Kong</i> . Agriculture, Fisheries and Conservation Department, Friends of the Country Parks and Cosmos Books Ltd.
4.	Shek, Chung-tong <i>et al.</i> (2006). <i>A Field Guide to the Terrestrial Mammals of Hong Kong</i> . Agriculture, Fisheries and Conservation Department, Friends of the Country Parks and Cosmos Books Ltd.
5.	Chan, Kin-fung <i>et al.</i> (2005). <i>Field Guide to the Amphibians of Hong Kong</i> . Agriculture, Fisheries and Conservation Department, Friends of the Country Parks and Cosmos Books Ltd.
6.	Dudgeon, D & Corlett, RT (2011). <i>The Ecology and Biodiversity of Hong Kong</i> . Cosmos Books & Lions Nature Education Foundation.
7.	Thomas M. Smith and Robert Leo Smith (2014). <i>Elements of Ecology, 9th Edition</i> . Pearson Education Limited.
8.	Michael Begon, Colin R. Townsend. (2016). <i>Ecology: From Individuals to Ecosystems, 5th Edition</i> . John Wiley & Sons.