City University of Hong Kong
Course Syllabus

offered by Department of Infectious Diseases and Public Health
with effect from Semester B 2019/20

Part I Course Overview

Course Title:	Freshwater Aquaculture and Aquatic Animal Health
Course Code:	GE2341
Course Duration:	1 semester
Credit Units:	3 credits
Level:	B2
Proposed Area: *(for GE courses only)*	☐ Arts and Humanities ☐ Study of Societies, Social and Business Organisations ■ Science and Technology
Medium of Instruction:	**English**
Medium of Assessment:	**English**
Prerequisites: *(Course Code and Title)*	**None**
Precursors: *(Course Code and Title)*	**None**
Equivalent Courses: *(Course Code and Title)*	**VM2106** Freshwater Aquaculture and Aquatic Animal Health
Exclusive Courses: *(Course Code and Title)*	**None**

Part II Course Details

1. Abstract

(A 150-word description about the course)

The Freshwater Aquaculture and Aquatic Animal health course focuses on fresh water aquaculture of food and ornamental fish and the primary health issues facing these industries. We will cover the main species used for ornamental and food production aquaculture, as well as the husbandry requirements of these species. We will also discuss the clinical presentation for health issues in fresh water aquaculture, as well as methods of diagnosing these conditions. Lastly, we will review important water quality parameters for different species and environmental issues facing fresh water aquaculture industries. This course considers a number of the key disciplines including husbandry, disease, nutrition, and reproduction. Upon completion of the course, students should have an understanding of the current developments of fresh water ornamental and food fish aquaculture, and the primary health issues facing these industries.

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.	Overview of freshwater aquaculture production systems for food and ornamental fish. Ability to identify key species for these industries.	✓	✓		
2.	Understanding of the key industry sectors, economics, health issues, environmental needs, and husbandry practices associated with the captive maintenance of freshwater aquatic animals (e.g., aquaculture, ornamental pet trade, public aquaria exhibits)	✓	✓		
3.	Understanding of environmental conditions and pathogens that cause diseases in freshwater aquatic animals.	✓	✓		
4.	Practical sampling of freshwater quality parameters and strategies to mitigate water quality issues.	✓	✓	✓	
5.	Ability to identify normal animals and tissues from a range of freshwater aquatic animals.	✓	✓		
6.	Ability to identify and describe a wide range of pathological manifestations and clinical signs of important freshwater aquatic animal diseases in order to determine the	✓	✓		

	cause of the disease and assess the risk of contagion.				
7.	Good understanding of the diagnostic procedures including fundamental theoretical knowledge, as well as practical experience with clinical and laboratory disease diagnosis.	✓	✓	✓	

 # 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	7	
Lectures	Lectures will provide fundamental concepts and principles of freshwater aquaculture systems and health issues facing these industries to students.	✓	✓	✓		✓	✓		2 hr/wk
Laboratory-based practical sessions	The laboratory practical sessions provide students with opportunities to understand, perform and report different sampling for fresh water quality parameters and identification of fresh water fish pathogens	✓		✓	✓			✓	4 hours every fourth week

4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No. 1	2	3	4	5	6	7	Weighting*	Remarks
Continuous Assessment: __65_%									
Midterm test	✓	✓			✓			*35%*	
Assignment	✓	✓	✓	✓	✓	✓		*20%*	Small group case write up
Laboratory worksheets				✓	✓		✓	*10%*	Attendance to labs and questions pertaining to lab exercise
Final exam			✓	✓		✓	✓	*35%*	
Examinations: _35___% (duration: 2 hours / exam)									
** The weightings should add up to 100%.*								100%	

5. Assessment Rubrics

The grading of the student's achievements is based on the following rubrics. For students from other academic units taking courses offered by the SVM, those students will not be given grades C- or D as there are no such grades in the courses. In accordance with the requirements of the accrediting authority, the "Marginal" grade of D is not used for veterinary students; the minimum passing grade is "C".

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C)	Failure (F)
1. Assignment	Students should be able to critically work through a fish disease case, evaluate literature on the topic, and present the case to their peers.	The student solves the fish health case without any assistance from the instructor (i.e. provide a differential list, list of diagnostic tests, recommendations to the fish owner and a prevention strategy based on a literature review). They complete a clearly written grammatically correct report on the case without any errors. They present the case to the class with an effective clear, and professional oral	The student solves the fish health case with limited assistance from the instructor (i.e. provide a differential list, list of diagnostic tests, recommendations to the fish owner and a prevention strategy based on a literature review). They complete a clearly written report on the case with only minor grammatical and content errors. They present the case to the class with an effective clear, and professional oral	The student solves the fish health case with assistance from the instructor (i.e. provide a differential list, list of diagnostic tests, recommendations to the fish owner and a prevention strategy based on a literature review). They complete a written report on the case but there are several grammatical and content errors. They present the case to the class but the presentation has errors and is not professional (choice of words, dress and mannerisms are not professional). Demonstrate some ability to assess a	Students fail to complete the assignment. They cannot accurately describe and work through relevant information related on various aspects of fish health issues. They cannot provide appropriate analysis and satisfactory justifications to the diagnosis of pathological manifestations, and may show evidence of plagiarism or inability to communicate ideas. And/or they submit a plagiarized assignment

		presentation. Demonstrate excellent synthesis of how to assess a fish health case in detail.	presentation with only a few minor mistakes. Demonstrate good synthesis of how to assess a fish health case in detail.	fish health case but needs prompting from the instructor.	
2. Laboratory	Students should attend all laboratory sessions, be attentive, and ask questions during the laboratory sessions. At the end of the laboratory they should be able to answer the questions pertaining to each laboratory session.	Students attend and answer all questions with sufficient detail to demonstrate a complete understanding of the issue.	Students attend and answer all questions with sufficient detail to demonstrate a good understanding of the issue.	Students attend and answer all questions with sufficient detail to demonstrate a fair understanding of the issue.	Students fail to attend the laboratory and or do not submit answers to the questions asked of them.
3. Midterm and final Examination	Students should have obtained and be able to communicate in written formats an understanding of the material covered in the classroom and the laboratory sessions on aquaculture, and freshwater aquatic animal health issues in captivity.	Students achieve a 86% or greater on the examination of the class and laboratory material.	Students achieve an 65% or greater on the examination of the class and laboratory material.	Students achieve a 50% or greater on the examination of the class and laboratory material. (C letter grade is at least 50% or greater)	Students achieve less than 50% on the examination of the class and laboratory material.

Conversion table from percentage mark to letter grade for VM2106

Letter Grade	***Mark Range***		***Letter Grade***	***Mark Range***
A+	*≥96%*		*C+*	*≥58-64%*
A	*≥91-95%*		*C*	*≥50-57%*
A-	*≥86-90%*		*F*	*≤49%*
B+	*≥79-85%*			
B	*≥72-78%*			
B-	*≥65-71%*			

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.)

Freshwater aquatic animals, Aquaculture, food fish, ornamental fish, infectious diseases, non-infectious diseases, water quality

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.	Selected reading material on warm water aquaculture systems assigned during the course

2.2 Additional Readings

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

1.	Holmes K. and Pitham T. 2011. Manual of Koi Health 2nd. Firefly Books Inc. Buffalo, NY.
2.	Stoskopf, MK. Fish Medicine. 1993. WB Saunders Company, Philadelphia, Pennsylvania.
3.	Leatherland, J. F., Woo, P. T. K., & Bruno, D. W. 1995. *Fish diseases and disorders (V1-3).* Wallingford, Oxon, UK: CABI Pub.
4.	Lucas, JS. And Southgate, PC. 2012. *Aquaculture arming aquatic animals and plants 2nd ed*. 2012. Wiley-Blackwell, John Wiley and Sons Ltd., West Sussex, UK.
5.	Noga, E, J., 2014. *Fish Disease Diagnosis and Treatment 2nd ed*. Wiley Blackwell, Daryaganj, New Delhi.

Annex
(for GE courses only)

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	4,5
PILO 2: Explain the basic methodologies and techniques of inquiry of the arts and humanities, social sciences, business, and science and technology	2,3
PILO 3: Demonstrate critical thinking skills	6
PILO 4: Interpret information and numerical data	4
PILO 5: Produce structured, well-organised and fluent text	4,7
PILO 6: Demonstrate effective oral communication skills	4,7
PILO 7: Demonstrate an ability to work effectively in a team	4,7
PILO 8: Recognise important characteristics of their own culture(s) and at least one other culture, and their impact on global issues	1
PILO 9: Value ethical and socially responsible actions	1
PILO 10: Demonstrate the attitude and/or ability to accomplish discovery and/or innovation	6,7

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
We will have a fish health case study worth 20% of the student's marks. This project will be a team project and the students will have to submit a 1 to 2 page report as well as a class presentation. This will test their ability to critically think through a problem and work together as a team.