VM2106: AQUACULTURE AND AQUATIC ANIMAL HEALTH

Effective Term
Semester A 2022/23

Part I Course Overview

Course Title
Aquaculture and Aquatic Animal Health

Subject Code
VM - Jockey Club College of Veterinary Medicine and Life Sciences
Course Number
2106

Academic Unit
Infectious Diseases and Public Health (PH)

College/School
Jockey Club College of Veterinary Medicine and Life Sciences (VM)

Course Duration
One Semester

Credit Units
3

Level
B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Completion of Year 1 courses with C grade or above

Precursors
None

Equivalent Courses
VM2106 Freshwater Aquaculture and Aquatic Animal Health

Exclusive Courses
None

Part II Course Details

Abstract

The Aquaculture and Aquatic Animal Health course focuses on 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 and saltwater aquaculture, as well as methods of diagnosing these conditions. Lastly, we will review important water quality parameters for different species and environmental issues facing aquaculture industries. This course considers a number of the key disciplines including husbandry, disease management, nutrition, and reproduction. Upon completion of the course, students will have an understanding of husbandry requirements of ornamental and food fish aquaculture species, and the primary health issues facing these industries.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Describe the key industry sectors, economics, environmental needs, and husbandry practices associated with the captive maintenance of aquatic animals (e.g., aquaculture, ornamental pet trade, public aquaria exhibits)		x		
2	Recognise environmental conditions and pathogens that cause diseases in freshwater aquatic animals and recommend appropriate mitigation strategies for aquatic health		x		
3	Evaluate water samples and identify issues with water quality parameters in aquaculture systems			x	
4	Conduct diagnostic tests and post mortems on aquatic animals, interpret results and describe normal and abnormal conditions in key aquatic animal species			x	

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 real-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.

Teaching and Learning Activities (TLAs)

	TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lectures	Lectures will provide fundamental concepts and principles of freshwater aquaculture systems and health issues facing these industries to students.	1, 2, 3	2 hr/wk
2	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	1, 2, 4	4 hours every fourth week

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Midterm test	1, 2, 3	40	
2	Assignment	3, 4	20	Small group case simulations and write up

Continuous Assessment (%)

60

Examination (%)

40

Examination Duration (Hours)

2

Additional Information for ATs

Remark: A penalty of 5% of the total marks for the assessment task will be deducted per day for late submissions, and no marks will be awarded for submissions more than 10 days later.

Assessment Rubrics (AR)

Assessment Task

1. Assignment

Criterion

Students should be able to critically work through a fish disease case, evaluate literature on the topic, and present the case to their peers.

Excellent (A+, A, A-)

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 presentation. Demonstrate excellent synthesis of how to assess a fish health case in detail.

Good (B+, B, B-)

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 presentation with only a few minor mistakes. Demonstrate good synthesis of how to assess a fish health case in detail.

Fair (C+, C, C-)

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 fish health case but needs prompting from the instructor.

Failure (F)

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

---

Assessment Task

2. Midterm and final Examination

Criterion

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.

Excellent (A+, A, A-)

Students achieve 86% or greater on the examination of the class and laboratory material.

Good (B+, B, B-)

Students achieve 65% or greater on the examination of the class and laboratory material.

Fair (C+, C, C-)

Students achieve 50% or greater on the examination of the class and laboratory material. (C letter grade is at least 50% or greater)

Failure (F)

Students achieve less than 50% on the examination of the class and laboratory material.

Additional Information for AR

Mark Range

The following is the mark range for each letter grade that must be used for assessment of courses offered by the PH and VCS Department of JCC (including Gateway Education (GE) courses)

Letter Grade	Mark Range	Letter Grade	Mark Range
A+	≥85%	C+	55-59.99%
A	80-84.99%	C	50-54.99%
A-	75-79.99%	F	<50%

B+	70-74.99%
B	65-69.99%
B-	60-64.99%

Part III Other Information

Keyword Syllabus

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

Reading List

Compulsory Readings

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

Additional Readings

	Title
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.