

City University of Hong Kong
Course Syllabus

Offered by Department of Infectious Diseases and Public Health
With effect from Semester B 2020/21

Part I Course Overview

Course Title: Function and Dysfunction

Course Code: VM 3100

Course Duration: 1 semester

Credit Units: 18 credits

Level: B3

Proposed Area: Arts and Humanities
(for GE courses only) Study of Societies, Social and Business Organisations
 Science and Technology

Medium of Instruction: English

Medium of Assessment: English

Prerequisites: Completion of Year 2 courses with C grade or above
(Course Code and Title)

Precursors: Nil
(Course Code and Title)

Equivalent Courses: Nil
(Course Code and Title)

Exclusive Courses: Nil
(Course Code and Title)

Part II Course Details

1. Abstract

(A 150-word description about the course)

The course *'Function and Dysfunction'* integrates the disciplines of physiology, pathophysiology, pharmacology, surgical pathology (gross and microscopic), and clinical pathology. These disciplines, particularly the latter two, provide a bridge between the basic sciences and clinical medicine. Broadly, the overall goal of this course is that: *'Students will gain a competent understanding of the integrated function and dysfunction of body systems from the molecular/cellular level to the whole organism. Within this context, students will appreciate the fundamental basis of relevant diagnostic techniques and appropriate therapeutic strategies.'*

The animal body comprises a large set of highly complex, but integrated, biological systems that operate over a wide range of levels, from the molecular to the whole animal. These systems provide mechanisms for gathering information from and interacting with both the external and internal environment, maintaining stability of the internal environment, and repairing structures and mechanisms that have undergone injury. This course is designed to develop an understanding of how an animal maintains itself as a functional organism in the face of environmental challenges, disease entities, functional and structural disorders, and injuries of all sorts. Principles learned in the course General Pathology will find application within the context of specific tissues and organ systems. This course is concerned with understanding how body systems work, how they are controlled and regulated, how veterinarians assess their function, what can go wrong with them, how they undergo repair, and how the veterinarian can aid the repair process.

The various disciplines that contribute to this course are organised into the following sections: Nervous System and General Pharmacology, Skeletal Muscle, Blood, Urinary System, Cardiovascular System, Respiratory System, Gastrointestinal Tract, Liver, Pancreas, Endocrine System, Reproductive System, and Ruminants. Each section of the course will address the relevant physiology, pathology, and pharmacology of the system of interest using a problem-based approach.

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.	Demonstrate a competent understanding of the integrated function and dysfunction of body systems from the molecular/cellular level to the whole organism in common domestic mammalian and avian species. Explain on a whole animal level what “services” each system provides, and the clinical signs that are commonly associated with dysfunction of specific body systems.		✓	✓	✓
2.	For each body system, explain the mechanisms that drive the function of each organ and tissue, the control mechanisms that regulate its functions, the factors (internal and external) that can perturb the control mechanisms, the consequences of loss of control, how the function of the system is inter-related to the function of other systems, and how the system’s organs handle both exogenous and endogenous compounds.		✓	✓	✓

3.	<p>For each body system, explain the mechanisms of injury and repair on an organ, tissue, cell, and subcellular level, particularly focusing on:</p> <ul style="list-style-type: none"> • The various ways in which the body system undergoes injury, • The lesions commonly encountered and the aetiology and pathogenesis of each, • How tissues in this organ respond to injury, • How uninjured cells respond in the presence of injured cells, • How the function of the organ is affected by injury to its cells, • How other systems are affected by cellular injury of this organ, • The clinical consequences of injury to the organ system, • How cellular injury (organ dysfunction) in the organ is detected clinically, • What the prognosis for the organ or whole animal function is, given a specific injury to this system. 		✓	✓	✓
4.	<p>Explain what subcellular functions of the cells in a body system are subject to modulation by exogenous and endogenous factors (drugs, toxins, neurotransmitters, hormones, etc.), and how systemic function is affected by modulation of subcellular functions.</p> <p>Explain how these factors enhance or impede the access of pharmacologic agents to the cells in this system, and apply the concepts of pharmacokinetics and pharmacodynamics to drug action.</p>		✓	✓	✓
5.	<p>Demonstrate competent clinical reasoning skills by:</p> <ul style="list-style-type: none"> • Creating diagnostically and therapeutically useful problem lists, • Generating multiple pathophysiological hypotheses to explain diseases and disorders, • Proposing diagnostic tests to distinguish among proposed hypotheses. 		✓	✓	✓
		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	
Problem-based learning (PBL) tutorials	Students will explore and learn to apply basic medical science that underlies and explains the development, presence, and treatment of clinical signs. Teaching and learning will be driven in an active learning environment in small groups, focusing on body systems and explaining the physiology, pathology, and pharmacology using a problem-based approach.	✓	✓	✓	✓	✓	7 hrs/wk
Lectures	Complementing the PBL core of the course, didactic lectures will address the physiology, pathology, and pharmacology of body systems on selected topics. Lectures will introduce and expand on topics that are not sufficiently addressed by the small-group activities, but are essential components of the veterinarian's database of knowledge.	✓	✓	✓	✓	✓	7 hrs/wk
Laboratory practicals	Teaching and learning will be based on hands-on laboratory sessions, aiming to deepen students' understanding of physiology, pathology, and pharmacology, using wet lab and computer-aided exercises.	✓	✓	✓	✓	✓	2 hrs/wk
Clinical Rounds	Teaching and learning will be based on clinical cases, presenting the history and clinical signs, and using these to explain the underlying physiological, pathological and pharmacological mechanisms. The interactive format will provide students an opportunity to test, practice, and sharpen clinical reasoning skills and knowledge acquired via other teaching modalities as part of their development of clinical expertise.	✓	✓	✓	✓	✓	2 hr/wk

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: 25%							
Individual Quizzes	✓	✓	✓	✓	✓	25%	Once every week
Examination: 75% (duration: 3 hours x 3)							
Final exam	✓	✓	✓	✓	✓	75%	
						100%	

* The weightings should add up to 100%.

Students must pass each examination and the continuous assessment as a whole to pass the course as a whole

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)	Failure (F)
1. Individual Quizzes	Ability to explain the pathology, physiology, and pharmacology in various veterinary medical conditions	Excellent in understanding, explaining, exploring and integrating the knowledge	Good in understanding, explaining, exploring and integrating the knowledge	Basic competence in understanding, explaining, exploring and integrating the knowledge	Poor in understanding, explaining, exploring and integrating the knowledge
2. Final exam	Ability to explain the pathology, physiology, and pharmacology in various veterinary medical conditions	Excellent in understanding, explaining, and integrating the knowledge in written format	Good in understanding, explaining, and integrating the knowledge in written format	Basic competence in understanding, explaining, and integrating the knowledge in written format	Poor 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.)

Physiology, Pathophysiology, Pharmacology, Surgical Pathology, Gross Pathology, Microscopic Pathology, Clinical Pathology, Nervous System, Skeletal Muscle, Blood, Urinary System, Cardiovascular System, Respiratory System, Gastrointestinal Tract, Liver, Pancreas, Endocrine System, Reproductive System, Ruminants, Problem-Based Learning, Clinical Reasoning Skills.

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.	Costanzo, L.S. (2018). <i>Physiology</i> , 6 th ed. Philadelphia: Saunders.
2.	Reece, W.O., Erickson, H.H., Goff, J.P., Uemura, E.E., ed. (2015) <i>Dukes' Physiology of the Domestic Animals</i> . 13 th ed. Ames, IA: Wiley.
3.	Zachary JF, eds. (2017). <i>Pathologic Basis of Veterinary Disease</i> . 6 th ed. St. Louis, MO: Elsevier; Elsevier Health Sciences.
4.	eClinPath.com, Cornell University
5.	Rang H, Ritter J, Flower R, Henderson G (2016). <i>Rang & Dale's Pharmacology</i> 8 th ed. London: Elsevier Churchill Livingstone.

2.2 Additional Readings

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

1.	Boron, W. F. and E. L. Boulpaep. (2016) <i>Medical Physiology: A Cellular and Molecular Approach</i> . 3 rd ed. Philadelphia: Saunders.
2.	Ettinger, S.J., Feldman, E.C., and Cote, E. (2017) <i>Textbook of Veterinary Internal Medicine</i> . 8 th ed. Philadelphia: Elsevier.
3.	Senger, P.L. (2012). <i>Pathways to pregnancy and parturition</i> 3 rd ed., Pullman, WA: Current Conceptions.