VM4000: HOST, AGENT AND DEFENCE

Effective Term
Semester A 2022/23

Part I Course Overview

Course Title
Host, Agent and Defence

Subject Code
VM - Jockey Club College of Veterinary Medicine and Life Sciences
Course Number
4000

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
18

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

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Completion of Year 3 courses with C grade or above

Precursors
Nil

Equivalent Courses
Nil

Exclusive Courses
Nil

Part II Course Details

Abstract
This course teaches the interactions between the agents of infectious diseases and their hosts. It will provide an overview of the major bacteria, fungi, parasites and viruses that infect animals and give a summary of the diseases that these pathogens

cause. It will cover the concept of health, mechanisms of normal and abnormal host defenses, environmental factors that affect the host agent relationship and the methods and procedures used to diagnose and control infectious disease. It is presented through lectures that cover the major bacterial, fungal, parasitic and viral pathogens of animals, and tutorial cases that guide integrated learning of concepts and facts in multiple disciplines. The disciplines that are presented in this course are immunology, epidemiology, microbiology including virology, bacteriology, mycology, parasitology, pathology, clinical pathology, laboratory medicine, and therapeutics. Learning is supported by laboratories, computer modules and group discussions. Students will acquire a competent, integrated understanding of events and interactions that cause infectious disease in individuals and populations; methods and procedures that are used to recognize and diagnose infectious disease; and preventative veterinary medicine including monitoring. The primary focus will be on cattle, horses, sheep, pigs, poultry, dogs, and cats.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Formulate hypotheses for a given clinical presentation of an infectious disease based on available information and similarity to diseases studied in various components of thecourse		x	x	
2	Design and justify a diagnostic plan that includes appropriate tests and procedures in a rational sequence. Explain the relationship between these test results and host/agent interactions		x	x	
3	Design and justify a treatment plan using antimicrobial/anti-parasitic drugs, immunologic modulation, and supportive care.		x	x	x
4	Design and justify a plan for disease prevention and control that includes, as appropriate, immunization, antimicrobial/anti-parasitic drugs, and changes in husbandry practice.		x	x	x
5	Explain the pathogenesis of diseases, accounting for the biologic characteristics of the agent; environmental factors; and the events, interactions, and effects of the host inflammatory and immune responses		x	x	
6	Determine and prioritize the pertinent facts of a case, Suggest and explain mechanisms that could account for or explain each fact or clinical sign.		x	x	
7	Recognize and investigate disease outbreaks through analysis and interpretation of provided data.		x	x	
8	Predict and interpret laboratory tests encountered in tutorial cases. Describe the principles and procedures of laboratory tests used to diagnose infectious disease and the source and handling of samples for the tests.		x	x	

9	Recognize in smears and sections of tissue the components of an inflammatory exudate, classify the exudate, and relate the morphologic characteristics to probable duration and type of pathogen		x	x	
10	Recognize organisms by their morphologic characteristics as presented in laboratories		x	x	
11	Evaluate the importance of different host/agent interactions in relation to injury sustained by the host, and use this knowledge to predict the outcome of the interaction		x	x	
12	Summarize a clinical case, in under 300 words or 5 minutes, including the pertinent facts, clinical signs, competing pathophysiological hypotheses, diagnostic strategy and rationale, and conclusions		x	x	
13	Demonstrate team working skills relevant to professional practice and competence: Actively participate in small-group study sessions, Contribute to defining and achieving team objectives, Work and communicate effectively and empathetically with team members.		x	x	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	Teaching and learning will be based on lectures of immunology, epidemiology, bacteriology, virology, parasitology, clinical pathology, systemic pathology, laboratory medicine and clinical pharmacology. Introducing and explaining effects of bacteria, parasites, fungi, and viruses infections in each organ system while comparatively analyzing individual host organ systems affected by pathogens. Introducing epidemiology, and clinical pharmacology theories and practices.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	5 hrs/wk
2	Problem-based learning Cases	PBL group sessions bring together, synthesize and delineate the major components of a specific infection case. Sessions integrate knowledge of the various disciplines to reach a differential diagnostic and a treatment plan.	1, 2, 6, 12, 13	3 hrs/wk

3	Laboratories	Computer and actual diagnostic cases present the clinical features, gross and histologic lesions and pathogenetic mechanisms of diseases related to major cases. Laboratory wrap-up sessions summarize the important concepts covered in the laboratory and allows students a chance to ask questions. Learning exercises that are designed to complement lectures and tutorial case studies and reinforce learning of facts and concepts through hands-on performance of procedures, analysis of data, and interactive computer cases.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	4 hrs/wk
4	Minor Cases	Six interactive cases presented as computer modules. Cases present selected diseases in a format similar to that of tutorial cases. The topic of the minor case in a given week relates to ongoing or preceding major themes.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	1 hrs/wk
5	Infectious Disease Rounds	Each IDR is a large group discussion, as an integrated multidisciplinary exploration of the clinical aspects and biological mechanisms of a clinical case, complementary to the preceding tutorial case.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	2 hrs/wk
6	Clinical Lectures	Lecture series that gives students a clinical perspective on a disease or condition covered in lectures, tutorial and minor cases.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	3 hrs/wk

7	Study Tips	Optional lecture to give guidance on ways that can help the student organize, manage and integrate the information they are asked to learn.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	1 hr/wk (Optional)

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Weekly Quizzes	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	16	
2	PBL	1, 2, 6, 12, 13	10	
3	Midterm	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	28	
4	Laboratory class reports	2, 8, 9	4	

Continuous Assessment (%)

58

Examination (%)

42

Examination Duration (Hours)

6

Additional Information for ATs

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. Quizzes

Criterion

Ability to explain the immunology, epidemiology, bacteriology, virology, parasitology, clinical pathology, systemic pathology, laboratory medicine and clinical pharmacology applicable to various veterinary medical conditions and disease outbreaks.

Excellent (A+, A, A-)

Excellent in understanding, explaining, exploring and integrating the knowledge

Good (B+, B, B-)

Good in understanding, explaining, exploring and integrating the knowledge

Fair (C+, C, C-)

Basic competence in understanding, explaining, exploring and integrating the knowledge

Failure (F)

Poor in understanding, explaining, exploring and integrating the knowledge

Assessment Task

2. Laboratory class reports

Criterion

Ability to explain the immunology, epidemiology, bacteriology, virology, parasitology, clinical pathology, systemic pathology, laboratory medicine and clinical pharmacology applicable to various veterinary medical conditions and disease outbreaks following each laboratory class.

Excellent (A+, A, A-)

Excellent in understanding, explaining, exploring and integrating the knowledge

Good (B+, B, B-)

Good in understanding, explaining, exploring and integrating the knowledge

Fair (C+, C, C-)

Basic competence in understanding, explaining, exploring and integrating the knowledge

Failure (F)

Poor in understanding, explaining, exploring and integrating the knowledge

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Assessment Task

3. Mid-term and Final Exam

Criterion

Ability to explain the immunology, epidemiology, bacteriology, virology, parasitology, clinical pathology, systemic pathology, laboratory medicine and clinical pharmacology applicable to various veterinary medical conditions and disease outbreaks.

Excellent (A+, A, A-)

Excellent in understanding, explaining, and integrating the knowledge in written format

Good (B+, B, B-)

Good in understanding, explaining, and integrating the knowledge in written format

Fair (C+, C, C-)

Basic competence in understanding, explaining, and integrating the knowledge in written format

Failure (F)

Poor in understanding, explaining, and integrating the knowledge in written format

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Assessment Task

4. PBL Participation, Assessment*

Criterion

Ability to work well in a team environment, with a commitment to participation in group work. Demonstration of effective self-management of learning.

Excellent (A+, A, A-)

Fully engaged with the team, assisting others and requesting assistance. Completes all out-of-class tasks. Always punctual.

Good (B+, B, B-)

Usually engaged with the team, assisting others and requesting assistance. Usually completes out-of-class tasks. Usually punctual.

Fair (C+, C, C-)

Sometimes engaged with the team, assisting others and requesting assistance. Sometimes completes out-of-class tasks. Sometimes punctual.

Failure (F)

Rarely or never engaged with the team, assisting others or requesting assistance. Rarely or never completes out-of-class tasks. Rarely or never punctual. Abusive, disruptive or offensive behaviour, bullying.

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%		

*** The Participation Assessment is a 'must pass' component; a failing grade at the Participation Assessment will lead to an overall F grade for the entire course**

Part III Other Information

Keyword Syllabus

Immunology, epidemiology, virology, bacteriology, mycology, pathology, clinical pathology, laboratory medicine, clinical pharmacology, Disease outbreaks, Diagnostic investigation, Laboratory medicine,

Reading List

Compulsory Readings

	Title
1	Bowman, D. (2013). Georgis' Parasitology for Veterinarians. 10th ed. St. Louis, MO:Saunders.
2	Parham, P. (2013). The Immune System, 3rd ed. Garland Science.
3	McVey, D.S. et al. (2013). Veterinary Microbiology. 3rd ed, Wiley-Blackwell.
4	Tizard I. R. (2012). Veterinary Immunology: An Introduction 9th ed. Elsevier.
5	Owen, J.A. et al. (2013). Kuby Immunology. 7'h ed. W. H. Freeman.
6	Greene C.E. (2011). Infectious Diseases of the Dog and Cat. 4th ed, Elsevier.
7	Smith B.P. (2014). Large Animal Internal Medicine. 5th ed. Elsevier.
8	Ettinger S.J. and Feldman, E.C. (2010). Textbook of Veterinary Internal Medicine: Diseases ofthe Dog and Cat. 7th ed. Saunders Elsevier.

Additional Readings

	Title
1	Acha, P. N. and Szyfres, B (1987). Zoonotic and Communicable Diseases Common to Manand Animals. PAHO.
2	Radostits, O. M. et al. (2007). Veterinary Medicine: a Textbook of the Diseases of Cattle.Sheep, Pigs and Horses, 10th ed. Saunders.
3	Dawson, B. and Trapp, R. G. (2004). Basic and Clinical Biostatistics, 4th ed. Lange.
4	Fletcher, R. H. et al. (2012). Clinical Epidemiology: The Essentials, 5th ed. LippincottWilliams & Wilkins.
5	Gyles, C. J., et al. (2010). Pathogenesis of Bacterial Infections in Animals, 4th ed.Wiley-Blackwell.
6	Markey, B. et al. (2013). Clinical Veterinary Microbiology, 2nd ed. Mosby.