VM4113: CLINICAL PATHOLOGY

Effective Term
Semester A 2024/25

Part I Course Overview

Course Title
Clinical Pathology

Subject Code
VM - Jockey Club College of Veterinary Medicine and Life Sciences
Course Number
4113

Academic Unit
Veterinary Clinical Sciences (VCS)

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

Course Duration
One Semester

Credit Units
2

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
Clinical pathology is a fundamental science which will be utilized throughout the career of veterinarians and forms part of the day one competencies for completion of the Bachelor of Veterinary Medicine offered at CityU. This course will provide

a solid platform of scientific knowledge in the field of clinical pathology, which includes collection of biological specimens (body fluids and fine needle aspirates), analytic processes, haematology, urinalysis, cytology, effusions and biochemistry.
Knowledge has an emphasis on pathogenesis of disease, focusing on diseases of mammals. Students will perform basic, common tests used in clinical practice and will review and interpret clinical data which will cement learning of course intended learning outcomes. Biological material used in this course consists mainly of surplus body fluids submitted to CityU's Veterinary Diagnostic Laboratory (de-identified to maintain client confidentiality), with additional donated specimens from surplus material from relevant stakeholders, as well as fresh tissues purchased from wet markets.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Identify and describe the pathogenic mechanisms of various diseases which create measurable/detectable abnormalities in a range of body fluids and tissues.		x	x	x
2	Demonstrate collection of biological specimens and creation of preparations for analysis from blood, urine, body fluids, tissues and effusions. Understand common errors and techniques to avoid damage to samples and preparation of non-diagnostic samples.		x	x	x
3	Perform laboratory analyses that are commonly performed within a veterinary practice on biological samples including blood, urine, body fluids and effusions. Identify processing errors and discuss their cause.		x	x	x
4	Interpret data from a range of analyzed biological samples using associated clinical case material, in order to diagnose disease conditions in mammals.		x	x	x
5	Practice required health and safety procedures, including use of appropriate personal protective equipment and handling of biological materials.		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.

Learning and Teaching Activities (LTAs)

	LTAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lectures	Students will engage in formal lectures which will provide an overview of haematology, biochemistry, urinalysis, body effusions and cytology principles in common, domestic mammals.	1, 2, 4	14 hours in total
2	Wet practicals*	Students will participate in group practical activities where students will create blood smears, perform packed cell volume and total protein measurements, perform urinalysis, process and interpret body effusions and aspirate wet tissues to make cytology samples. Students are required to practice good laboratory technique and apply suitable PPE.	2, 3, 5	6 hours in total
3	Dry practicals*	Students will engage in group activities where students will review and discuss clinical case material derived from VDL case materials.	1, 4	6 hours in total

Additional Information for LTAs

* These are participation and engagement-required TLA sessions. Students can be absent from no more than one of these sessions per course per semester. Additional absence will constitute a course failure.

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Intrasemester quizzes 1. Hematology 2. Biochemistry and urinalysis	1, 2, 3, 4	40	Each quiz is worth 20% and will include biological data and image interpretation.
2	Participation at wet and dry practicals#	1, 2, 3, 4, 5	10	MUST PASS Participation will be assessed. Rubric used to allocate a grade.

3	Final Examination (2 hrs)	1, 2, 3, 4		Weighting: 50% Demonstrate sound knowledge and understanding in the pathogenesis of diseases in terms of hematology, biochemistry, urinalysis, body effusions and cytology.

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

2

Additional Information for ATs

MUST PASS: > OR equal to 50% needs to be achieved for this component; < 50% is a fail of subject

Assessment Rubrics (AR)

Assessment Task

Intrasemester quizzes

Criterion

Ability to explain the pathogenesis, examine, compare and contrast collection, analysis and interpretation of biological specimens including blood, urine, body effusions and cytological specimens from mammals.

Excellent (A+, A, A-)

Will exhibit a high level of competence in interpreting biological data to formulate differential diagnoses. Will demonstrate high level of defining pathogenic mechanisms of clinical disease in terms of clinical pathology data.

Good (B+, B, B-)

Will exhibit a good level of competence in interpreting biological data to formulate differential diagnoses. Will demonstrate good level of defining pathogenic mechanisms of clinical disease in terms of clinical pathology data.

Fair (C+, C, C-)

Will exhibit a basic level of competence in interpreting biological data to formulate differential diagnoses. Will demonstrate basic level of defining pathogenic mechanisms of clinical disease in terms of clinical pathology data.

Failure (F)

Will exhibit lack of competency in interpreting biological data to formulate differential diagnoses. Will demonstrate lack of competency defining pathogenic mechanisms of clinical disease in terms of clinical pathology data.

Assessment Task

Examination

Criterion

Ability to describe the pathogenesis of disease, explain collection and processing techniques of biological specimens, and interpret biologically generated data to formulate differential diagnoses.

Excellent (A+, A, A-)

Will exhibit high competency in;
- describing disease pathogenesis
- explaining collection and processing techniques of biological specimens
- interpreting biologically generated data to formulate differential diagnoses.

Good (B+, B, B-)

Will exhibit good competency in;
- describing disease pathogenesis
- explaining collection and processing techniques of biological specimens
- interpreting biologically generated data to formulate differential diagnoses.

Fair (C+, C, C-)

Will exhibit basic competency in;
- describing disease pathogenesis
- explaining collection and processing techniques of biological specimens
- interpreting biologically generated data to formulate differential diagnoses.

Failure (F)

Will exhibit lack of competency in;
- describing disease pathogenesis
- explaining collection and processing techniques of biological specimens
- interpreting biologically generated data to formulate differential diagnoses.

Additional Information for AR

Rubric for participation in dry and wet practicals

A maximum of 30 marks will be awarded, according the rubric below (6 criteria; each having a maximum mark of 5: so 6 x 5 = 30. 30 will be converted to a mark out of 10; which will represent 10% of the total subject grade).

Failing mark for wet and dry practicals: obtaining a score of **less than** 15/30 (or less than 5% of the total subject grade) for practicals, according to the supplied rubric, will constitute a fail for the subject.

For each 6 criteria included in the rubric below, the number of marks allocated will be as follows:

- Excellent: 5 marks
- Good: 4 marks
- Fair: 3 marks
- Inadequate: 2 marks
- No attempt / Actively Harmful: 0 marks

Criterion: 1. Engagement

Excellent: Fully engaged with teaching and learning activity, participates with commitment and focus.

Good: Usually engaged with teaching and learning activity, participates with commitment and focus.

Fair: Variably engaged with teaching and learning activity, lapses in participation.

Inadequate: Rarely engaged with teaching and learning activity, participates only when told to.

No attempt / Actively harmful: No attempt to participate. No acceptable reason for not participating. (Note that simply attending does not equal participation)

Criterion: 2. Initiative

Excellent: Frequently volunteers for tasks and initiates discussion.

Good: Often volunteers for tasks and initiates discussion.

Fair: Occasionally volunteers for tasks and initiates discussion.

Inadequate: Rarely volunteers for tasks or initiates discussion.

No attempt / Actively harmful: Never volunteers or initiates discussion.

Criterion: 3. Getting help and giving assistance

Excellent: Consistently asks for help when stuck, checks in with other participants, encourages others, helps resolve misunderstandings in a constructive manner.

Good: Usually asks for help when stuck, checks in with other participants, encourages others, helps resolve misunderstandings in a constructive manner.

Fair: Sometimes asks for help when stuck, checks in with other participants, encourages others, helps resolve misunderstandings in a constructive manner.

Inadequate: Limited engagement with participants and collective activities during the tutorials .

No attempt / Actively harmful: Disruptive to tutorial process.

Criterion: 4. Team tasks and role sharing

Excellent: Always works together with the group using a variety of resources to complete tasks.

Good: Usually works together with the group using a variety of resources to complete tasks.

Fair: Partial engagement with the group using a variety of resources to complete tasks.

Inadequate: Reluctant to assist others and resists taking team roles when nominated.

No attempt / Actively harmful: Offensive, abusive behaviour, bullying towards other students and/or the tutor.

Criterion: 5. Paying attention and contributing insights

Excellent: Pays respectful attention to the group discussion and offers insight and suggestions that advance the group's learning using clear and non-confusing communication.

Good: Usually follows the group discussion and occasionally offers insight and suggestions that advance the group's learning using clear and non-confusing communication.

Fair: Variably attentive to the group discussion and offers few insights and suggestions that advance the group's learning using unclear communication.

Inadequate: Rarely offers insight or suggestions and is often detached from the group discussion offering irrelevant or confusing information.

No attempt / Actively harmful: Refusal or failure to respond to requests for group interaction, uncommunicative or hostile.

Criterion: 6. Punctuality

Excellent: Arrives on time to all sessions.

Good: Arrives on time to all but one sessions of a case; if late keeps group updated with progress before arriving.

Fair: Arrives on time to all but one session of a case, no communication with group.

Inadequate: Arrives on time to only one session of a case.

No attempt / Actively harmful: Late arrival to all sessions of a case.

Mark Range

The following is the mark range for each letter grade that must be used for assessment of any examinations or coursework of BVM courses (VM- and GE-coded) offered by PH and VCS:

A+: ≥92%
A: ≥87-91.99%
A-: ≥82-86.99%
B+: ≥75-81.99%
B: ≥68-74.99%
B-: ≥61-67.99%
C+: ≥54-60.99%
C: ≥50-53.99%
F:<50%

Part III Other Information

Keyword Syllabus

Haematology, blood tubes, analytic processes, biochemistry, packed cell volume, total protein, urinalysis, effusions, cytology, mammals, birds, disease pathogenesis, differential diagnosis, clinical diagnosis, definitive diagnosis, sample collection, personal protective equipment, good laboratory skills.

Reading List

Compulsory Readings

	Title
1	Notes and learning materials are provided by the lecturer.

Additional Readings

	Title
1	eClinPath website: https://eclinpath.com/
2	Veterinary hematology and clinical chemistry (2012). 2nd edition, Thrall, Weiser, Allison and Campbell. Wiley-Blackwell.
3	Fundamentals of Veterinary Clinical Pathology (2008). 2nd edition. Stockham and Scott. Blackwell publishing.
4	Diagnostic cytology and haematology of the Dog and Cat (2019). Valenciano AC and Cowell RL. 5th edition. Elsevier