



Program: Doctor of Veterinary Medicine
Course title: Veterinary Clinical Pathology
Course code: VSPA436

Academic degree level ☒ Bachelor ☐ Graduate Diploma ☐ Master

☐ Higher Graduate Diploma ☐ Doctor

Faculty / College / Institute: Faculty of Veterinary Science

Department: Pre-clinic and Applied Animal Science

TQF 3 Course Specification

Section 1 General Information

1. Course Code and Title

In Thai สปปส ๔๓๖ พยาธิวิทยาคลินิกทางสัตวแพทย์

In English VSPA 436 Veterinary Clinical Pathology

2. Number of Credits 3 (2-3-5)

(Theory 2 hrs. Practice 3 hrs. Self-Study 5 hrs./week)

3. Curriculum and Course Type

3.1 Curriculum Bachelor Degree Program (Thai)

3.2 Course Type Compulsory Course

4. Course Coordinator and Lecturer

4.1 Course Responsible Lecturers

1. Dr. Panop Wilainam Preclinics and applied animal science

Contact: Telephone 02-4415242-1532 E-mail: panop.wil@mahidol.edu

2. Assist.prof.Dr. Parin Suwannaprapha Preclinics and applied animal science

Contact: Telephone 02-4415242-1508 E-mail: parin.suw@mahidol.edu

- ##### 4.2 Lecturers
1. Dr. Panop Wilainam
 2. Assist.prof.Dr. Tawewan Tansatit
 3. Assist.prof.Dr. Parin Suwannaprapha
 4. Assist.prof.Dr. Nlin Arya
 5. Assoc.prof.Dr. Shutipen Buranasinsup
 6. Dr. Kripitch Suthammarn
 7. Dr. Apisit Ponthammawat

5. Semester/Class Level

5.1 Semester 1 / Class Level 4

5.2 Number of Students Allowed Approximately 80 Students

6. Pre-requisite

VSPA 335 Veterinary Systemic Pathology

7. Co-requisites

No

8. Study Site Location Faculty of Veterinary Science, Mahidol University

9. Date of Preparation/Latest Revision of the Course Specifications

21 February 2020

Section 2 Aims and Objectives

1. Course Goals

To provide the learning experiences for the students in order to acquire the knowledge, better understanding and skills associated with specimen collection and submission to the diagnostic laboratory. Enhancing the capabilities for the accurate interpretation of the laboratory results.

2. Objectives of Course Development/Revision

2.1 Course Objectives

This course aims to provide knowledge and abilities as follows:

1. Proper specimen collection, handling and transport.
2. Proper selection of the clinical laboratory testing and accurate interpretation of laboratory data.

2.2 Course-level Learning Outcomes: CLOs

On completion of the course, the students will be able to

1. CLO1 Properly collect, handle and transport animals' specimens submitted for laboratory testing.
2. CLO2 Correctly interpret and analyse the clinical laboratory data necessarily used for the diagnosis.

Section 3 Course Description and Implementation

1. Course Description

การเก็บตัวอย่างเซลล์ เลือด อุจจาระ ปัสสาวะ ซีรัม น้ำไขสันหลัง และของเหลวอื่นๆในร่างกาย การเก็บรักษาตัวอย่าง การส่งตัวอย่าง ไปยังห้องปฏิบัติการ และการแปลผลการตรวจทางห้องปฏิบัติการเพื่อประกอบการวินิจฉัยโรค

Specimen collection of cytology, blood, feces, urine, serum, cerebrospinal fluid and body fluid. Specimen handling and transport to the diagnostic laboratories and interpretation of laboratory results for the disease diagnosis.

2. Number of hours per semester

Theory (hours)	Practice (hours)	Self-study (hours)
30 (15x2)	45 (15x3)	75 (15x5)

3. Number of Hours per Week for Individual Advice

2 hours/weeks. Individual advice through the personal consultation or through electronic mail.

Section 4: Development of the expected learning outcomes

1. A brief summary of the knowledge or skills expected to develop in students; the course-level expected learning outcomes (CLOs)

On completion of the course, students will be able to:

1. CLO1 collect, handle and transport the specimens properly.
2. CLO2 precisely interpret and analyse the laboratory results which are required for the further diagnosis.

2. How to organize learning experiences to develop the knowledge or skills stated in number 1 and how to measure the learning outcomes

CLOs	Teaching and learning experience management					Learning outcomes measurements	
	Lecture	Demonstration	Practice	-	-	Lecture examination	Laboratory examination
CLO1	x	x	x			x	x
CLO2	x	x	x			x	x

SECTION 5 LESSON PLAN AND EVALUATION

1. Lesson Plan

Teaching Period	Topics/Details	Number of hours		Methods: Teaching Media	Lecturer
		Theory*	Practice**		
1	Hematology I-II Introduction, qualitative and quantitative analysis of red blood cells, anemia and laboratory interpretation	4	-	Interactive lecture/powerpoint presentation	Tawewan
2	Hematology III Qualitative and quantitative analysis of white blood cells	2	3	Interactive lecture/powerpoint presentation Laboratory practice/laboratory samples	Kripitch
3	Hematology IV Leukemia, blood parasites, qualitative and quantitative interpretation of white blood cells	2	3	Interactive lecture/powerpoint presentation Laboratory practice/laboratory samples	Apisit
4	Hemostasis Diseases and disorders of hemostasis. Laboratory tests for hemostatic evaluation	2	3	Interactive lecture/powerpoint presentation Laboratory practice/laboratory samples	Kripitch
5	Cytological evaluation I	2	3	Interactive lecture/powerpoint presentation Laboratory practice/laboratory samples	Parin
6	Cytological evaluation II	2	3	Interactive lecture/powerpoint presentation Laboratory practice/laboratory samples	Parin
7	Cytological evaluation III	2	3	Interactive lecture/powerpoint presentation Laboratory practice/laboratory samples	Apisit
8	Laboratory investigation of endocrine diseases I	2	3	Interactive lecture/powerpoint presentation Discussion of case study	Panop
9	Laboratory investigation of endocrine diseases II	2	3	Interactive lecture/powerpoint presentation Discussion of case study	Panop
10	Laboratory investigation of hepatobiliary diseases	2	3	Interactive lecture/powerpoint presentation Discussion of case study	Parin
11	Laboratory investigation of musculoskeletal diseases	2	3	Interactive lecture/powerpoint presentation Discussion of case study	Nlin

Teaching Period	Topics/Details	Number of hours		Methods: Teaching Media	Lecturer
		Theory*	Practice**		
12	Laboratory investigation of gastrointestinal and exocrine pancreatic diseases	2	3	Interactive lecture/powerpoint presentation Discussion of case study	Panop
13	Laboratory investigation of urinary diseases	2	3	Interactive lecture/powerpoint presentation Laboratory practice/laboratory samples	Kripitch
14	Laboratory investigation of electrolytes and acid-base disorders	2	3	Interactive lecture/powerpoint presentation Discussion of case study	Nlin
15	Conferences	-	6	Case study presentation and discussion	All staffs
	Total hours of the entire semester	30	45		

2. Plan for Assessment of Expected Course-Level Learning Outcomes (CLOs)

2.1 Measurement and Evaluation of learning achievement

A. Formative Assessment

The assessment is performed during the course to measure the progress and development of students' learning by observing the behavior change and improvement of students' behavior and performance. The assessment results will be notified to the students (feedback) so that the students are constantly able to improve themselves. The assessment results are not included with the test scores at the end of the course.

B. Summative Assessment

(1) Tool and weight for measurement and evaluation

Learning Outcomes	Evaluation Method*			Weight (Percentage)
	Lecture exam (MCQ/Essay)	Laboratory exam (short answer)	Case study presentation	
CLO1 Properly collect, handle and transport animals' specimens submitted for laboratory testing	35	8	-	43
CLO2 Correctly interpret and analyse the clinical laboratory data necessarily used for the diagnosis	40	6	11	57
total	75	14	11	100

(2) Measurement and evaluation

The measurement and evaluation use either the criteria-based or group-based system, according to the conditions and methods for academic results evaluation of the Faculty of Veterinary Science, Mahidol University. The grading symbols are: A, B+, B, C+, C, D+, D, and F. Students must receive a 'D' grade or above to pass the criteria.

(3) Re-examination (if the course allows any.)

In case that students received an 'F' grade, the course coordinator and the program's Teaching and Learning Development Committee should, altogether, agreed to allow the students to take the re-examination or extra-course work to pass the course with the following conditions.

For the course with the mean score is higher than 75.00 and the minimum score is not less than 45.00. Students must receive the score higher than 47.50 to take to re-examination or extra-course work.

For the course with the mean score between 60.00 – 74.99, students must receive the score higher than 40.00. However, when the mean score is less than 60.00, students, then, should receive the score higher than 40.00 in order to take the re-examination or extra-course work.

Once students took the re-examination (extra-course work) and the course coordinator had considered the students' re-examination/course work to pass the criteria, then the students will receive the 'D' grade. While waiting for the re-examination or extra-course work result, the students' score should be indicated as 'I' grade.

3. Students' Appeal

Should the students have any suspicion or appeals to the teaching and learning activities and the grade assessment, students could make the appeal by filling in the form at MUVS' Academic Affairs. The appeal will be proposed to the course coordinator to consider the request. If the appeal could not be addressed at this point, it will be further process by the program's Teaching and Learning Development Committee. In case that the committee suggested further investigation should be done, the appeal will be purposed to the faculty's appealing committee to address the issue.

Section 6 Teaching Resources

1. Required Texts

- 1) Clinical Pathology for the Veterinary Team 2010
- 2) Duncan and Prasse's Veterinary Laboratory Medicine: Clinical Pathology, 5th Edition 2011
- 3) Fundamentals of Veterinary Clinical Pathology, 2nd Edition 2011

- 4) Veterinary Hematology and Clinical Chemistry 2nd Edition 2012

2. Suggested Materials

- 1) journal of the american veterinary medical association
- 2) Veterinary clinical pathology (Journal)
- 3) Veterinary record journal

3. Other Resources

- 1) Laboratory materials and equipment
- 2) Specimens including blood, urine, secretion and animals' tissues,

Section 7 Evaluation and Improvement of Course Implementation

1. Strategy for Course Effectiveness Evaluation by Students

At the end of each course, it is required for the students to assess the teaching of each instructor based on the following criteria: punctuality, good role model, application of morals and ethics for the instruction, ability to convey knowledge and encourage students to learn, giving opportunities for students to ask questions and to comment during the study.

The overall outcomes of each course will also be assessed by the students for the following issues: the instructor's knowledge and competency, the course's effectiveness, student's satisfaction with the study, and other comments from students. The evaluation is conducted through online platform.

2. Strategy for Teaching Evaluation

The instructors or the course coordinators are assigned to conduct the evaluation as follows.

2.1 the students' evaluation for the instruction and overall outcomes of the course in accordance to criteria mentioned in No. 1 – Strategy for Course Effectiveness by Students.

2.2 The instructors must perform self-assessment for the following criteria.

- (1) Appropriate time spent to prepare for the teaching.
- (2) The instructor's satisfaction with the teaching results.
- (3) Solutions or recommendations for the program's teaching improvement or self-improvement for the next class/academic year.

3. Teaching Improvement

Prior to each academic year, there are meetings/seminars for the instructors of each course to plan to improve the course's teaching and learning management based on the following information.

- (1) the students' academic performance
- (2) the students' evaluation results
- (3) the instructors' assessment results

4. Verification of Standard of Learning Outcome for the Course

The verification of the standard of the Learning Outcome for the Course is conducted by the course coordinators based on the following aspects.

1. The goals of the learning outcomes are clear and feasible.
2. The learning experience is aligned with the expected goals.
3. The learning experience encourages the students to research and practice self-learning skills.
4. The evaluation methods are appropriate to assess the expected goals and learning experience.
5. The program applied the educational theory and the results from the previous evaluation to plan for improvement.

At the end of each academic year, the course coordinators, instructors, the Program Committee, and the Teaching and Learning Development Committee will consider the assessment results and the Learning Outcome for the Course to plan for the improvement of the next academic year.

Appendix

Relations between the course and the program

Table 1 Relations between the course and the PLOs

Course Name	PLOs							
Veterinary clinical pathology	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
(Course Code) VSPA 436	R	P						

Table 2 Relations between CLOs and PLOs

VSPA436	PLOs							
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
CLO1 Properly collect, handle and transport animals' specimens submitted for laboratory testing		2.4						
CLO2 Correctly interpret and analyse the clinical laboratory data necessarily used for the diagnosis.	1.1							