



Program: Doctor of Veterinary Medicine
Course title: Veterinary Systemic Pathology
Course code: VSPA 335

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 สปส ๓๓๕ พยาธิวิทยาตามระบบทางสัตวแพทย์
In English VSPA 335 Veterinary Systemic Pathology

2. Number of Credits 4 (Theory ...3..... hrs. Practice ...3..... hrs. Self-Study ...7..... hrs./week)

3. Curriculum and Course Type

3.1 Curriculum Bachelor Degree Program (Thai)
3.2 Course Type Specific Course ☒ Compulsory Course ☐ Electives

4. Course Coordinator and Lecturer

4.1 Course Responsible Lecturers

4.1.1 Tawewan Issarankura Na Ayudhaya

Department of Preclinic and Applied Animal Science : Tel 0-2441-5242-4 Ext. 1521

E-mail: tawewan.tan@mahidol.edu

4.1.2 Parin Suwannaprapha

Department of Preclinic and Applied Animal Science : Tel 0-2441-5242-4 Ext. 1508

E-mail: parin.suw@mahidol.edu

4.2 Lecturers

4.2.1 Tawewan Issarankura Na Ayudhaya (TI)

Department of Preclinic and Applied Animal Science : Tel 0-2441-5242-4 Ext. 1521

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4.2.2 Parin Suwannaprapha (PS)

Department of Preclinic and Applied Animal Science : Tel 0-2441-5242-4 Ext. 1508

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4.2.3 Panop Wilainam (PW)

Department of Preclinic and Applied Animal Science : Tel 0-2441-5242-4 Ext. 1532

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5. Semester/Class Level

5.1 Semester ... 2.. / Class Level .3..

5.2 Number of Students Allowed Approximately 80 Students

6. Pre-requisite

VSPA 334

7. Co-requisites

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

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

12 July 2022

Section 2 Aims and Objectives

1. Course Goals

Provide learning experiences to enable the students to perform necropsy, describe the normal and altered morphology (gross and microscopy) and pathogenesis of the lesions of different organ systems and correlate with clinical signs in different diseases to assess diagnosis and prognosis.

Objectives /Goals of Course Management:

2. Objectives of Course Development/Revision

2.1 Course Objectives

This course aims to provide knowledge and abilities as follows:

- 2.2.1 Describe gross and microscopic changes in tissues, the underlying pathogenesis of lesions in each organ system which is caused by infectious and non-infectious agents
- 2.2.2 Explain the correlation of the lesions in tissues and organs to the clinical symptoms of the effected animals.
- 2.2.3 Describe the correlation of pathology found in tissues and organs to other systems, as well as the whole animal body
- 2.2.4 Collaborate with team to perform necropsy and systematically examine the entire carcass according to the regulations for biosafety and biosecurity



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2.2.5 Discuss with team and write the accurate necropsy report

2.2 Course-level Learning Outcomes: CLOs

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

1. CLO1: Accurately describe gross and microscopic changes in tissues, the underlying pathogenesis of lesions in each organ system which is caused by infectious and non-infectious agents.
2. CLO2: Correctly correlate the lesions in tissues and organs to the clinical symptoms of the effected animals.
3. CLO3: Perform necropsy correctly with team by following the regulation of biosafety and biosecurity
4. CLO4: Accurately describe the pathogenesis of the lesions found at the necropsy
5. CLO5: Accurately identify the cause of death and give a diagnosis from necropsy
6. CLO6: Write an accurate and complete necropsy report

Section 3 Course Description and Implementation

1. Course Description

การเปลี่ยนแปลงทางพยาธิวิทยาของเซลล์ เนื้อเยื่อและอวัยวะที่สัมพันธ์กับอาการทางคลินิกและผลการชันสูตรซากในระบบไหลเวียนโลหิต ทางเดินหายใจ ทางเดินอาหาร สืบพันธุ์ ประสาท อวัยวะรับสัมผัสพิเศษ ผิวหนัง ขับถ่ายปัสสาวะ กระดูกและกล้ามเนื้อ ต่อมไร้ท่อ ระบบสร้างเม็ดเลือด

Pathological changes of cells, tissues, and various organ systems that correlating with the clinical pictures and necropsy findings in the cardiovascular, respiratory, digestive, reproductive, nervous, special sense organs, integument, urinary, musculoskeletal, endocrine, and hemopoietic systems

2. Number of hours per semester

Theory (hours)	Practice (hours)	Self-study (hours)
45	45	105

3. Number of Hours per Week for Individual Advice

1 hr/week

Identify the following information: The process or method that the person in-charge uses and time allocated for individual students.



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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:

- 1.1 CLO1: Accurately describe gross and microscopic changes in tissues, the underlying pathogenesis of lesions in each organ system which is caused by infectious and non-infectious agents.
- 1.2 CLO2: Correctly correlate the lesions in tissues and organs to the clinical symptoms of the effected animals.
- 1.3 CLO3: Perform necropsy correctly with team by following the regulation of biosafety and biosecurity
- 1.4 CLO4: Accurately describe the pathogenesis of the lesions found at the necropsy
- 1.5 CLO5: Accurately identify the cause of death and give a diagnosis from necropsy
- 1.6 CLO6: Write an accurate and complete necropsy report

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	Demon & Lab. practice (gross pathology).....	Demon & Lab. practice (histo pathology).....	Necropsy lab practice	Group discussion	Written exam, MCQ	Lab exam (gross pathology)	Lab exam (histo pathology)	Necropsy conference
CLO1	X	X	X			X	X	X	
CLO2	X								
CLO3	X	X	X	X	X				X
CLO4					X				X
CLO5					X				X
CLO6					X				X



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SECTION 5 LESSON PLAN AND EVALUATION

1. Lesson Plan

Teaching Period	Topics/Details	Number of hours		Methods: Teaching Media	Lecturer
		Theory*	Practice**		
1	Pathology to nervous system	3		Lecture: ppt and textbook chapter 14, ref 5	PS
			3	Demonstration and Laboratory practice	PS, PW, TI
2	Pathology to respiratory system	3		Lecture: ppt and textbook chapter 9, ref 5	TI
			3	Demonstration and Laboratory practice	PS, PW, TI
3	Pathology to cardiovascular system	3		Lecture: ppt and textbook chapter 10, ref 5	PS
			3	Demonstration and Laboratory practice	PS, PW, TI
4.	Pathology to integument system	3		Lecture: ppt and textbook chapter 17, ref 5	PS
			3	Demonstration and Laboratory practice	PS, PW, TI
5	Pathology to haemopoietic system	3		Lecture: ppt and textbook chapter 13, ref 5	TI
			3	Demonstration and Laboratory practice	PS, PW, TI
6	Pathology to special sense organ	3		Lecture: ppt and textbook chapter 20, 21, ref 5	PS
			3	Demonstration and Laboratory practice	PS, PW, TI
7	Pathology to endocrine system	3		Lecture: ppt and textbook chapter 12, ref 5	PW



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Teaching Period	Topics/Details	Number of hours		Methods: Teaching Media	Lecturer
		Theory*	Practice**		
			3	Demonstration and Laboratory practice	PS, PW, TI
8	Pathology to urinary system	3		Lecture: ppt and textbook chapter 11, ref 5	TI
			3	Demonstration and Laboratory practice	PS, PW, TI
9	Pathology to alimentary system I	3		Lecture: ppt and textbook chapter 7, ref 5	PW
			3	Demonstration and Laboratory practice	PS, PW, TI
10	Pathology to alimentary system II	3		Lecture: ppt and textbook chapter 7, ref 5	PW
			3	Demonstration and Laboratory practice	PS, PW, TI
11	Pathology to liver and pancreas	3		Lecture: ppt and textbook chapter 8, ref 5	PS
			3	Demonstration and Laboratory practice	PS, PW, TI
12	Pathology to musculoskeletal system	3		Lecture: ppt and textbook chapter 15 & 16, ref 5	PW
			3	Demonstration and Laboratory practice	PS, PW, TI
13	Pathology to male reproductive system	3		Lecture: ppt and textbook chapter 19, ref 5	PW
			3	Demonstration and Laboratory practice	PS, PW, TI
14	Pathology to female reproductive system	3		Lecture: ppt and textbook chapter 18, ref 5	TI



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Teaching Period	Topics/Details	Number of hours		Methods: Teaching Media	Lecturer
		Theory*	Practice**		
			3	Demonstration and Laboratory practice	PS, PW, TI
15	Postmortem change/necropsy	3		Lecture: ppt and textbook ref 4	TI
			3	Group discussion: Perform necropsy, conference	PS, PW, TI
	Total hours of the entire semester	45	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)
	Written exam & MCQ	Group work	Individual work presentation	..xx..	
CLO1: Accurately describe gross and microscopic changes in tissues, the underlying pathogenesis of lesions in each organ system which is caused by infectious and non-infectious agents.	45				45
CLO2:	45				45



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Correctly correlate the lesions in tissues and organs to the clinical symptoms of the effected animals					
CLO3: Perform necropsy correctly with team by following the regulation of biosafety and biosecurity		5			5
CLO4: Accurately describe the pathogenesis of the lesions found at the necropsy		2			2
CLO5:					
Accurately identify the cause of death and give a diagnosis from necropsy		1			1
CLO6: Write an accurate and complete necropsy report			2		2
total	90	8	2		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 processed 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. Jones TC, Hunt RD, King NW. Veterinary Pathology. 6th edition. Williams & Wilkins; 1997
2. McGavin MD, Carlton WW, Zachary JF. Thomson's Special Veterinary Pathology. 3rd edition. Mosby Inc; 2001.
3. McGavin MD, ZACHARY JF. Pathologic Basic of Veterinary Disease. 5th edition. Mosby Elsevier; 2012.
4. King JM, Johnson LR, Dodd DC, Newson M. The Necropsy Book: A guide for Veterinary Students, Clinicians, Pathologists, and Biological Researchers. Revised January 2013.
5. ZACHARY JF. Pathologic Basic of Veterinary Disease. 6th edition. Mosby Elsevier; 2017.

2. Suggested Materials

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3. Other Resources (if any)

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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.



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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							
Systemic Pathology	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
(Course Code) VSPA 335	R	P				R	R	

Table 2 Relations between CLOs and PLOs

VSPA335	PLOs							
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
CLO1: Accurately describe gross and microscopic changes in tissues, the underlying pathogenesis of lesions in each organ system which is caused by infectious and non-infectious agents	R							
CLO2: Correctly correlate the lesions in tissues and organs to the clinical	R							



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symptoms of the effected animals								
CLO3: Perform necropsy correctly with team and follow the regulation of biosafety and biosecurity		P						
CLO4: Accurately describe the pathogenesis of the lesions found at the necropsy	R					R		
CLO5: Accurately identify the cause of death and give a diagnosis from necropsy	R					R	R	
CLO6: Write an accurate and complete necropsy report	R					R		