

Course Specification

Section 1 General Information

1. Course Code and Title

In Thai	สพปส 710	สาเหตุและขบวนการเกิดโรค
In English	VSPA 710	Causes and Progression of Disease

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 Program Master of Science Program in Veterinary Biomedical Sciences
(International Program)
- 3.2 Course Type Specific Course ☒ Compulsory Course ☐ Elective Course

4. Course Coordinator and Instructor

4.1 Course Responsible Instructor

Department of Preclinic and Applied Animal Science

- Lect.Dr.Dulyatad Gronsang (DG)
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4.2 Instructors

Department of Preclinic and Applied Animal Science

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5. Semester/Class Level

- | | | |
|-----|----------------------------|---------------------------|
| 5.1 | Semester | 1 / Class Level or year 1 |
| 5.2 | Number of Students Allowed | Approximately 20 Students |

6. Prerequisites

None

7. Co-requisites

None

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

26th June 2025

Section 2 Course Goals and Course Description

1. Course Goals

Specifically, this course is designed to increase the students' knowledge and understanding as follows:

- 1) Various terminologies used in veterinary pathology related to the concept of cell injury caused by infectious and non-infectious agents, the changes produce thereby in the different tissues, organs, and the organ system.
- 2) The concepts of neoplasia with reference to the etiology, gross and microscopic features, diagnosis and prognosis in different tissues and organs of the body.
- 3) The causes and pathological changes in various organ systems in the animal's body, how these changes affect the body and how they are reflected in the results of pathology laboratory investigations and facilitate the overcoming of the functional consequences of morphological changes
- 4) Detailed analysis of specific diseases, together with discussion of relevant diagnostic and will enable the student to begin to integrate in the different fields of study

2. Course Description

(In Thai) สาเหตุของการเกิดโรคติดเชื้อและโรคไม่ติดเชื้อ การเปลี่ยนแปลงทางพยาธิสรีรวิทยาของเซลล์ เนื้อเยื่อ อวัยวะ กลไกการบาดเจ็บ การเสื่อม การปรับตัว การตายของเซลล์ การอักเสบ การซ่อมแซมเนื้อเยื่อ การเจริญของเซลล์ที่ผิดปกติ การเกิดมะเร็ง

(In English) Etiology of infectious and non-infectious diseases, pathophysiological change of cells, tissues and organ; mechanism of cell injury, degeneration, adaptation and cell death, inflammation, tissue healing, abnormal cell growth and neoplasia

Section 3

Course Objectives, Course-level Learning Outcomes and Course Implementation

1. Course Objectives

The curriculum has been updated to enhance student achievement by equipping learners with the ability to accurately use veterinary pathology terminology, analyze cell injury and tissue alterations from infectious and non-infectious agents, explain core principles of neoplasia, and effectively interpret pathological changes in organ systems in relation to laboratory findings and animal health.

2. Course-level Learning Outcomes: CLOs

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

- 1) CLO 1 Identify changes in the cell, tissue, and organ systems of the animal body associated with the pathological process resulted from infectious and non-infectious agents.
- 2) CLO 2 Recognize and describe basic macroscopic and microscopic features of both basic pathological processes and selected diseases using the correct vocabulary.
- 3) CLO 3 Correctly classify and explain different lesions with different causes, consequences, or concomitants of disease processes.
- 4) CLO 4 Correlate clinical features, investigation, management and prevention of disease with causes and mechanisms of disease.

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

CLOs	Teaching and learning experience management		Learning outcomes measurements		
	Lecture	Lab practice	MCQ, short answer/essay, take home essay	Practical exam	Seminar/ group presentation
CLO1	X	X	X	x	x
CLO2	X	X	X	x	x
CLO3	X	X	X	x	x
CLO4	X		X	x	x

Section 4 Lesson Plan and Evaluation

1. Lesson Plan

Week or No.	Topic	Hours			Teaching Meth- ods / Media	CLOs	Lec- turers
		Lecture	Laboratory	Self Study			
1	Cellular reaction to injury	2	3	5	Lecture/ppt, his- topath. lab prac- tice & discussion	1,2,3,4	PW
2	Cell adaptation	2	3	5	Lecture/ppt, his- topath. lab prac- tice & discussion	1,2,3,4	PW
3	Hemodynamic Disorders/ Inflammation I	2	3	5	Lecture/ppt, his- topath. lab prac- tice & discussion	1,2,3,4	AP/TI
4	Inflammation II & wound healing	2	3	5	Lecture/ppt, his- topath. lab prac- tice & discussion	1,2,3,4	TI
5	Cancer biology	2	3	5	Lecture/ppt, his- topath. lab prac- tice & discussion	1,2,3,4	PS
6	Immune Response I	2	3	5	-Lecture & discus- sion -Demonstrate lab & discussion	1,4	DG/KC
7	Immune Response II	2	3	5	-Lecture & discus- sion -Demonstrate lab & discussion	1,4	NB/DG
8	Diseases related to fungal infec- tion	2	3	5	-Lecture & discus- sion -Demonstrate lab & discussion	1,4	NB & staff

Week or No.	Topic	Hours			Teaching Meth- ods / Media	CLOs	Lec- turers
		Lecture	Laboratory	Self Study			
9	Diseases related to viral and prion infections	2	3	5	-Lecture & discussion -Demonstrate lab & discussion	1,4	KC
10	Diseases related to bacterial infection	2	3	5	-Lecture & discussion -Demonstrate lab & discussion	1,4	NP
11	Diseases related to toxin	2	3	5	-Lecture & discussion -Demonstrate lab & discussion	1,4	BC/SB
12	Diseases related to parasitic infection I	2	3	5	- Lecture & discussion -Demonstrate lab & discussion	1,4	CJ
13	Diseases related to parasitic infection II	2	3	5	- Lecture & discussion -Demonstrate lab & discussion	1,4	SS/TC
14	Immunopathology	2	3	5	- Lecture & discussion	1,2,3,4	KS
15	Diseases related to nutrition and environmental factors	2	3	5	- Lecture & discussion	1,2,3,4	NA
Total hours of the entire semester		30	45	75			

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			
	MCQ, short answer/ essay, take home essay	Practical exam	Seminar/Group presentation	(Percentage)
CLO1 Identify changes in the cell, tissue, and organ systems of the animal body associated with the pathological process resulted from infectious and non-infectious agents.	13	9	12	34
CLO2 Recognize and describe basic macroscopic and microscopic features of both basic pathological processes and selected	6	3	7	16
CLO3 Correctly classify and explain different lesions with different causes, consequences, or concomitants of disease processes	6	3	7	16

Learning Outcomes	Evaluation Method			
	MCQ, short answer/ essay, take home essay	Practical exam	Seminar/Group presentation	(Percentage)
CLO4 Correlate clinical features, investigation, management, and prevention of disease with causes and mechanisms of disease.	13	9	12	34
Total	38	24	38	100

(2) Grading Rules

A, B+, B, C+, C, D+, D, and F

(3) Measurement and Evaluation

The evaluation uses either a criterion-referenced or norm-referenced system in accordance with the Faculty of Veterinary Science, Mahidol University's grading policies. Grades are assigned as A, B+, B, C+, C, D+, D, and F. Students must receive a B or higher to pass.

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

If a student receives an F, and the course coordinator and the teaching committee deem it appropriate to allow a retake examination or additional work, the student must have a score of at least 47.50 for score sets with an average above 75.00, and at least 45.00 for score sets with an average between 60.00 and 74.99. For score sets with an average below 60.00, the student must have a score of at least 40.00 to be eligible for a retake examination or additional work. If the course co-ordinator considers the retake examination or additional work as "pass," the student's grade will be changed to D. During the period of retake examination or additional work, the student's grade will be temporarily marked as I (Incomplete).

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 administration 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 5 Teaching Resources

1. Required Texts

- 1) Abbas AK, Lichtman AH, Pillai S. Cellular and Molecular Immunology. 10th ed. Philadelphia: Elsevier/Saunders; 2021.
- 2) Callahan GN. Basic Veterinary Immunology. Boulder: University Press of Colorado; 2014.
- 3) Jones TC, Hunt RD, King NW. Veterinary Pathology. 6th edition. Williams & Wilkins; 1997
- 4) McGavin MD, Carlton WW, Zachary JF. Thomson's Special Veterinary Pathology. 3rd edition. Mosby Inc; 2001.
- 5) McGavin MD, ZACHARY JF. Pathologic Basic of Veterinary Disease. 5th edition. Mosby Elsevier; 2012.
- 6) Tizard IR. Veterinary Immunology. 10th ed. St. Louis, Missouri: Elsevier; 2018.
- 7) Zachary JF. Pathologic Basic of Veterinary Disease. 6th edition. Elsevier Inc; 2017.
- 8) Zachary JF. Pathologic Basis of Veterinary Disease. 7th Edition. Elsevier Inc; 2021.

2. Suggested Materials

- 1) Pubmed
- 2) Scienedirect
- 3) Google Scholar

3. Other Resources (if any)

Mahidol University Library and Knowledge Center (<https://www.li.mahidol.ac.th>)

Section 6 Evaluation and Improvement of Course Implementation

1. Analysis and Evaluation of Course Implementation

A. Data for Analysis

Course evaluation forms (e-evaluation system) and Results of course evaluations (e-evaluation system) based on the following information:

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

B. Course Effectiveness Evaluation

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.

2. Revision Process and Improvement Plan for Course Effectiveness

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.

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 above.

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.

After the course evaluation and verification, the course effectiveness will be improved through the following:

- (1) The course is revised every 3 years according to the evaluation and verification.
- (2) Rotation or changing of instructors so students get different research points of view.

3. The self-assessment report of the course

MM5 form is submitted at the end of the course instruction and evaluation period.

Appendix

1. Relations between the course and the program

Table 1 Relations between the course and the PLOs

	Program-Level Learning Outcomes (PLOs)					
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
VSPA 710 / Causes and Progression of Disease/ 2 (2-3-5)		R	R	R	R	

Table 2 Relation between CLOs and PLOs

CLOs	PLOs					
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
CLO1 Identify changes in the cell, tissue, and organ systems of the animal body associated with the pathological process resulted from infectious and non infectious agents.		X	X			
CLO2 Recognise and describe basic macroscopic and microscopic features of both basic pathological processes and selected diseases using the correct vocabulary.		X	X			
CLO3 Correctly classify and explain different lesions with different causes, consequences, or concomitants of disease processes		X	X	X	X	
CLO4 Correlate clinical features, investigation, management and prevention of disease with causes and mechanisms of disease.		X	X	X	X	

Table 3 PLOs and SubPLOs that the course is responsible for

PLOs	SubPLOs
PLO 1 Manage ethical and moral problems in field practice with evidence-base approaches and leadership together with appropriate logic and value.	-
PLO 2 Prioritize scientific information in bio-medical veterinary science and apply the beneficial output to develop laboratory practice and research study.	-
PLO 3 Integrate the theory and experiences together with scientific evidences to develop the new knowledge in veterinary science through research study.	-
PLO 4 Communicate efficiently with multidisciplinary academic colleagues and staff by using the communicate appropriately with the individual groups, both in academic and professional	-
PLO 5 Utilize digital and information technology (IT) to encourage working network communication, data analysis together with presentation and research publication.	-
PLO 6 Evaluate principles, purposes, strong critical-thinking with problem-solving skills, to utilizing veterinary science literacy as integral part of the thought process	-

2. Rubric scoring

Rubrics evaluation criteria for each criteria

(Students need to be in grade “Fair” or above to pass in each CLO)

Presentation Rubric (38%)

CLO	Criterion	Needs Improvement (0–1)	Fair (2)	Good (3–4)	Excellent (5)	Weight
CLO1	Identification of Pathological Changes: Correctly identifies and describes cellular, tissue, and organ changes associated with pathological processes.	Major errors or omissions in identifying or describing changes.	Some correct identification, but incomplete or unclear.	Mostly correct and clear identification; minor details lacking.	Thorough and accurate identification with clear, detailed descriptions.	12
CLO2	Recognition and Description of Features: Recognizes and describes macroscopic and microscopic features of pathological processes.	Lacks recognition or misdescribes features; unclear or incorrect.	Basic recognition: some features described, but superficial or partial.	Recognizes and describes most features clearly and accurately.	Excellent, detailed recognition and description of all relevant features.	7
CLO3	Classification and Explanation of Lesions: Classifies lesions by cause, consequence, or disease association, and explains reasoning.	Misclassifies or cannot explain lesion types or associations.	Attempts classification; explanation is limited or partly correct.	Correct classification with clear, mostly accurate explanations.	Accurately classifies all lesions and provides insightful, comprehensive explanations.	7
CLO4	Correlation and Application: Correlates clinical features, investigations, management, and prevention with disease mechanisms.	Fails to correlate findings with mechanisms or clinical features.	Limited or unclear correlations; misses some key aspects.	Correlations are generally accurate and relevant; some depth shown.	Outstanding, insightful correlation of clinical, investigative, and management aspects with underlying mechanisms.	12

3. Relations between the course and Sustainable Development Goals (SDGs)

- | | | |
|-------------------------------------|-------|---|
| ☐ | SDG1 | No poverty |
| ☐ | SDG2 | Zero Hunger |
| ☒ | SDG3 | Good Health and Well – being |
| ☒ | SDG4 | Quality Education |
| ☐ | SDG5 | Gender Equality |
| ☐ | SDG6 | Clean Water and Sanitation |
| ☐ | SDG7 | Affordable and Clean Energy |
| ☐ | SDG8 | Decent Work and Economic Growth |
| ☐ | SDG9 | Industry, Innovation and Infrastructure |
| ☐ | SDG10 | Reduced Inequalities |
| ☐ | SDG11 | Sustainable Cities and Communities |
| ☐ | SDG12 | Responsible Consumption and Production |
| ☐ | SDG13 | Climate Action |
| ☐ | SDG14 | Life Below Water |
| ☐ | SDG15 | Life on Land |
| ☐ | SDG16 | Peace, Justice and Strong Institutions |
| ☐ | SDG17 | Partnerships for the goals |

Course schedule for Causes and Progression of Disease [VSPA710]

Semester 1/2026

Week or No.	Date	Topic	Hours			Teaching Methods / Media	Lecturers
			Lecture	Laboratory	Self- Study		
1	17/08/2026	Cellular Reactions to Injury Cell adaptation	4 9.00 am - 2.00 pm		10	Lecture, ppt	PW
2		Hemodynamic Disorders	1 2.00-3.00 pm		2.5	Lecture, ppt	PA
		Introduction to Inflammation	1 3.00-4.00 pm		2.5	Lecture, ppt	TI
3	20/08/2026	Inflammation & wound healing	2 9 . 0 0 - 11.00 am		5	Lecture, ppt	TI
		Cellular Reactions to Injury Cell adaptation		6 12.00 am - 6.00 pm		Histopath. Lab practice ,discussion	PW
4	24/08/2026	Hemodynamic Disorders		1.5 9.00-10.30 am		Histopath. Lab practice, discussion	PA
		Inflammation & wound healing		4.5 10.30 am - 4.00 pm		Histopath. Lab practice, discussion	TI
5	27/08/2026	Cancer biology	2 9 . 0 0 - 11.00 am	3 1.00-4.00 pm	5	Lecture/ Histopath. Lab practice, discussion	PS
	31/08/2026	Examination(w1-w5)	9 . 0 0 - 12.00 am				Staffs
6	3/09/2026	Immune Response I	2 9 . 0 0 - 11.00 am	3 1.00-4.00 pm	5	Lecture/demonstrate lab	DG/KC

Week or No.	Date	Topic	Hours			Teaching Methods / Media	Lecturers
			Lecture	Laboratory	Self- Study		
7	7/09/2026	Immune Response II	2 9 . 0 0 - 11.00 am	3 1.00-4.00 pm	5	Lecture/demonstrate lab	NB
8	10/09/2026	Diseases related to fungal infection	2 9 . 0 0 - 11.00 am	3 1.00-4.00 pm	5	Lecture/demonstrate lab	NB
9	14/09/2026	Diseases related to toxin	2 9 . 0 0 - 11.00 am	3 1.00-4.00 pm	5	Lecture/demonstrate lab	BC/SB
10	17/09/2026	Diseases related to bacterial infection	2 9 . 0 0 - 11.00 am	3 1.00-4.00 pm	5	Lecture/demonstrate lab	NP
11	21/09/2026	Diseases related to virus and prion infec- tions	2 9 . 0 0 - 11.00 am	3 1.00-4.00 pm	5	Lecture/demonstrate lab	KC
12	24/09/2026	Diseases related to parasite I	2 9 . 0 0 - 11.00 am	3 1.00-4.00 pm	5	Lecture/demonstrate lab	CJ
13	28/09/2026	Diseases related to parasite II	2 9 . 0 0 - 11.00 am	3 1.00-4.00 pm	5	Lecture/demonstrate lab	SS/TC
14	1/10/2026	Immunopathology	2 9 . 0 0 - 11.00 am	3 1.00-4.00 pm	5	Lecture/discussion [Online]	KS
15	8/10/2026	Diseases related to nutrition and environ- mental factors	2 9 . 0 0 - 11.00 am	3 1.00-4.00 pm	5	Lecture/discussion	NA
	12/10/2026	Examination (W6-15)	9 . 0 0 - 12.00				Staffs

Lecture Schedule

วันที่ (Date)	เวลา (Time)	สถานที่ (Venue / Room)
17 Aug 2026	9:00 AM – 4:00 PM	Small Seminar Room, 5th Floor
20 Aug 2026	9:00 AM – 11:00 AM	Sakul Kraisorn Room, 5th Floor
27 Aug 2026	9:00 AM – 11:00 AM	Sakul Kraisorn Room, 5th Floor
31 Aug 2026	9:00 AM – 12:00 PM	Small Seminar Room, 5th Floor
3 Sep 2026	9:00 AM – 11:00 AM	Matchanu Room, 1st Floor
7 Sep 2026	9:00 AM – 11:00 AM	Small Seminar Room, 5th Floor
10 Sep 2026	9:00 AM – 11:00 AM	Sakul Kraisorn Room, 5th Floor
14 Sep 2026	9:00 AM – 11:00 AM	Small Seminar Room, 5th Floor
17 Sep 2026	9:00 AM – 11:00 AM	Seminar Room 1, 3rd Floor
21 Sep 2026	9:00 AM – 11:00 AM	Small Seminar Room, 5th Floor
24 Sep 2026	9:00 AM – 11:00 AM	Kraisorn Sajasri (Kraisorn Rajasi) Room, 4th Floor
28 Sep 2026	9:00 AM – 11:00 AM	Sakul Kraisorn Room, 5th Floor
1 Oct 2026	9:00 AM – 11:00 AM	Online (Contact KS for meeting link)
8 Oct 2026	9:00 AM – 12:00 PM	Small Seminar Room, 5th Floor
12 Oct 2026	9:00 AM – 12:00 PM	Small Seminar Room, 5th Floor

Practice

- **Venue:** Laboratory rooms, Floor 6, 7, and 9