



Program: Doctor of Veterinary Medicine
Course title: Veterinary Parasitology
Course code: VSPA 333

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 สพปส ๓๓๓ ปรสสัตววิทยาทางการสัตวแพทย์
In English VSPA 333 Veterinary Parasitology

2. Number of Credits 5 (3-6-8)

(Theory 3 hrs. Practice 6 hrs. Self-Study 8 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 Assoc.Prof.Dr. Sivapong Sungpradit (SS)

Department: Pre-clinic and Applied Animal Science

Telephone number: 02-4415242-4 ext. 1525 E-mail: sivapong.sun@mahidol.edu

4.1.2 Assoc.Prof.Dr. Tanasak Changbunjong (TC)

Department: Pre-clinic and Applied Animal Science

Telephone number: 02-4415242-4 ext. 1201 E-mail: tanasak.cha@mahidol.edu

4.1.3 Asst.Prof.Dr. Charoonluk Jirapattharasate (CJ)

Department: Pre-clinic and Applied Animal Science

Telephone number: 02-4415242-4 ext. 1535 E-mail: charoonluk.jir@mahidol.edu

4.2 Lecturers

4.2.1 Assoc.Prof.Dr. Sivapong Sungpradit (SS)

Department: Pre-clinic and Applied Animal Science

Telephone number: 02-4415242-4 ext. 1525 E-mail: sivapong.sun@mahidol.edu

4.2.2 Assoc.Prof.Dr. Tanasak Changbunjong (TC)

Department: Pre-clinic and Applied Animal Science

Telephone number: 02-4415242-4 ext. 1201 E-mail: tanasak.cha@mahidol.edu

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Telephone number: 02-4415242-4 ext. 1535 E-mail: charoonluk.jir@mahidol.edu

4.2.4 Mr. Thanakorn Rawangchue (TR)

Department: Pre-clinic and Applied Animal Science

Telephone number: 02-4415242-4 ext. 1201 E-mail: thanakhorn.raw@mahidol.ac.th

4.2.5 Mr. Thekhawet Weluwanalak (TW)

Department: Pre-clinic and Applied Animal Science

Telephone number: 02-4415242-4 ext. 1201 E-mail: thekhawet.wel@mahidol.edu

4.2.6 Miss Arunee Jangsangthong (AJ)

Department: Pre-clinic and Applied Animal Science

Telephone number: 02-4415242-4 ext. 1601 E-mail: arunee.jan@mahidol.edu

5. Semester/Class Level

5.1 Semester 1 / Class Level 3

5.2 Number of Students Allowed Approximately 80 Students

6. Pre-requisite

SCBI 123 Process of life

7. Co-requisites

None

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

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

4 April 2022



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Section 2 Aims and Objectives

1. Course Goals

Provide learning experiences for students to obtain knowledge and understanding of classification, morphology, life cycle, pathology, and epidemiology of arthropods, protozoa, and helminths in veterinary for using the diagnosis of parasites in animals including treatment prevention and control according to professional standards.

2. Objectives of Course Development/Revision

2.1 Course Objectives

This course aims to provide knowledge and abilities as follows:

- 2.1.1 Knowledge of classification, morphology, life cycle of parasites in livestock. (ruminants, pigs, poultry) and domestic animals (dogs, cats, horses) including arthropods, protozoa and helminths, as well as pathology and epidemiology.
- 2.1.2 Knowledge of important helminth species in livestock and domestic animals categorized by host orientation and body systems including gastrointestinal, respiratory, circulatory, muscular, skin, eye, and reproductive systems.
- 2.1.3 Knowledge of important protozoa species in livestock and domestic animals according to body systems, including gastrointestinal, respiratory, circulatory, muscle, skin, and reproductive systems.
- 2.1.4 Knowledge of arthropod species of veterinary importance and disease vectors in livestock and domestic animals.
- 2.1.5 Skill in laboratory diagnosis of fecal samples, blood, tissues and other excretions.

2.2 Course-level Learning Outcomes: CLOs

On completion of the course, the students will be able to (CLOs)

- 1. CLO1 To describe the species, morphology and life cycle of parasites in livestock. (ruminants, pigs, poultry) and domestic animals (dogs, cats, horses) including arthropods, protozoa and helminths, as well as pathology and epidemiology.
- 2. CLO2 To describe the important helminth species in livestock and domestic animals accurately categorized by host orientation and body systems including gastrointestinal, respiratory, circulatory, muscle, skin, eye, and reproductive systems.
- 3. CLO3 To describe the important protozoa species in livestock and domestic animals according to body systems, including gastrointestinal, respiratory, circulatory, muscle, skin, and reproductive systems.
- 4. CLO4 To describe the arthropod species of veterinary importance and disease vectors in livestock and domestic animals.



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5. CLO5 To practice the laboratory diagnosis of fecal samples, blood, tissues and other excretions.

Section 3 Course Description and Implementation

1. Course Description

การจัดจำแนกสัณฐานวิทยา วงชีวิต พยาธิสภาพ และระบาดวิทยา ของสัตว์ขาปล้อง โปรโตซัว และหนอนพยาธิทางการสัตวแพทย์ เพื่อใช้ในการตรวจวินิจฉัยปรสิตในสัตว์ การรักษา การป้องกันและควบคุม

Classification, morphology, life cycle, pathogenesis and epidemiology of arthropods, protozoa and helminths in veterinary science; for diagnosis of the animal parasites, treatment; prevention and control

2. Number of hours per semester

Theory (hours)	Practice (hours)	Self-study (hours)
45	90	120

3. Number of Hours per Week for Individual Advice

5 hour/wee



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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. CLO1 To describe the species, morphology and life cycle of parasites in livestock. (ruminants, pigs, poultry) and domestic animals (dogs, cats, horses) including arthropods, protozoa and helminths, as well as pathology and epidemiology.
2. CLO2 To describe the important helminth species in livestock and domestic animals accurately categorized by host orientation and body systems including gastrointestinal, respiratory, circulatory, muscle, skin, eye, and reproductive systems.
3. CLO3 To describe the important protozoa species in livestock and domestic animals according to body systems, including gastrointestinal, respiratory, circulatory, muscle, skin, and reproductive systems.
4. CLO4 To describe the arthropod species of veterinary importance and disease vectors in livestock and domestic animals.
5. CLO5 To practice the laboratory diagnosis of fecal samples, blood, tissues and other excretions.

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	Laboratory demonstration	Laboratory practice	Group work	MCQ	Assay	Lab examination	Presentation
CLO1	/	/			x	x	x	
CLO2	/	/		/	x	x	x	x
CLO3	/	/		/	x	x	x	x
CLO4	/	/		/	x	x	x	x
CLO5	/	/	/				x	



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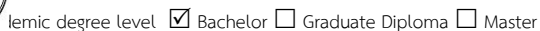
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SECTION 5 LESSON PLAN AND EVALUATION

1. Lesson Plan

Teaching Period	Topics/Details	Number of hours		Methods:Teaching Media	Lecturer
		Theory*	Practice**		
1	1. Veterinary Arthropods Lecture - Introduction of Veterinary Entomology - General characteristics of arthropods - Cockroach, bed bug, and triatomine bug Laboratory - General characteristics of arthropods - External and internal structures Lecture - Diptera Laboratory - Cockroach, bed bug, and triatomine bug - Black fly, biting midge, sand fly, and mosquito Lecture - Lice and fleas Laboratory - Adult stage of tabanids, house fly, stable fly, horn fly, flesh fly, and blow fly - Larval stage of muscid fly Lecture - Ticks and mites Laboratory - General characteristics of biting and sucking lice	12	17	Lecture: ppt and handout Laboratory: Demonstration	Lecture: Tanasak Laboratory: All lecturers

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Teaching Period	Topics/Details	Number of hours		Methods: Teaching Media	Lecturer
		Theory*	Practice**		
	- Flagellate, ciliate protozoa and <i>Entamoeba</i> spp. Laboratory - <i>Trypanosoma</i> spp., <i>Leishmania</i> spp.,				
	<i>Giardia duodenalis</i> , <i>Balantidium coli</i> , <i>Entamoeba</i> spp. 3. Veterinary helminthology: Trematode Lecture - Introduction to trematode - Important trematode parasites of dogs and cats - Important trematode parasites of humans Laboratory - General structure of trematode - Important trematode parasites of dogs, cats and humans - Important blood fluke parasites of humans	3	3	Lecture: ppt and handout Laboratory: Demonstration	Lecture: Charoonluk Laboratory: All lecturers
3	1. Veterinary helminthology: Trematode Lecture - Important trematode parasites of ruminants - Important trematode parasites of swine	3	3	Lecture: ppt and handout Laboratory: Demonstration	Lecture: Charoonluk Laboratory: All lecturers

Teaching Period	Topics/Details	Number of hours		Methods:Teaching Media	Lecturer
		Theory*	Prac-tice**		
	- Important trematode parasites of horse - Important trematode parasites of poultry Laboratory - Important trematode parasites of ru-minants				
	- Important trematode parasites of swine - Important trematode parasites of horse - Important trematode parasites of poultry 2. Advanced techniques in parasitology Lecture - Advanced techniques in parasitology 3. Seminar I - Entomology and protozoology 4. Veterinary helminthology: Cestode Lecture - Introduction to cestode - Important cestode parasites of dogs and cats Laboratory - General structure of cestode	3 6	3 7	Lecture: ppt and handout Lecture: ppt and handout Laboratory: Demonstration	Laboratory: All lecturers Lecture: Si-vapong Laboratory: All lecturers



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Teaching Period	Topics/Details	Number of hours		Methods: Teaching Media	Lecturer
		Theory*	Practice**		
	- Important cestode parasites of dogs and cats Lecture - Important cestode parasites of ruminants and poultry - Important cestode parasites of horse - Important zoonotic cestode parasite				
	Laboratory - Important cestode parasites of ruminants and poultry - Important cestode parasites of horse - Important zoonotic cestode parasites 5. Veterinary helminthology: Nematode Lecture - Introduction to nematode - Important nematode parasites of poultry Laboratory - General structure of nematode	3	4	Lecture: ppt and handout Laboratory: Demonstration	Lecture: Si-vapong Laboratory: All lecturers
4	1. Veterinary helminthology: Nematode Lecture - Important nematode parasites of dogs and cats - Important nematode parasites of swine - Fecal sample collection Laboratory	6	8	Lecture: ppt and handout Laboratory: Demonstration	Lecture: Si-vapong Laboratory: All lecturers



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Teaching Period	Topics/Details	Number of hours		Methods: Teaching Media	Lecturer
		Theory*	Practice**		
	- Important nematode para-sites of poultry - Important nematode para-sites of dogs and cats Lecture - Important nematode para-sites of ruminants - Important nematode para-sites of horse Laboratory - Important nematode para-sites of swine - Important nematode para-sites of ruminants - Important nematode para-sites of horse Laboratory practice - Arthropod samples preparation Laboratory practice: - Blood smear Laboratory practice: - Preparation of permanent slide of internal parasites		7	Laboratory practice	Laboratory: All lecturers
			7	Laboratory practice	Laboratory: All lecturers
			7	Laboratory practice	Laboratory: All lecturers
5	Laboratory practice: - Qualitative fecal examination - Quantitative fecal examination Seminar II		7	Laboratory practice	Laboratory: All lecturers
			3		Laboratory: All lecturers



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Teaching Period	Topics/Details	Number of hours		Methods: Teaching Media	Lecturer
		Theory*	Practice**		
	- Helminthology				
	Total hours of the entire semester	45	90		

Theory* refers to learning activities for development of knowledge and skills on cognitive, affective, and social domains.

Practice* refers to learning activities for developing psychomotor skills or workplace-based experience.

Methods* refer to how to organize learning experience such as lectures, presentation, group projects seminars, individual works online studies, etc.

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



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Learning Outcomes	Evaluation Method*			Weight (Percentage)
	MCQ Assay	Laboratory examination	group presentation	
CLO1 To describe the species, morphology and life cycle of parasites in livestock. (ruminants, pigs, poultry) and domestic animals (dogs, cats, horses) including arthropods, protozoa and helminths, as well as pathology and epidemiology.	12.5	10	-	22.5
CLO2 To describe the important helminth species in livestock and domestic animals accurately categorized by host orientation and body systems including gastrointestinal, respiratory, circulatory, muscle, skin, eye, and reproductive systems.	12.5	10	2	24.5
CLO3 To describe the important protozoa species in livestock and domestic animals according to body systems, including gastrointestinal, respiratory, circulatory, muscle, skin, and reproductive systems.	12.5	10	2	24.5
CLO4 To describe the important protozoa species in livestock and domestic animals according to body systems, including gastrointestinal, respiratory, circulatory, muscle, skin, and reproductive systems.	12.5	10	2	24.5
CLO5 To practice the laboratory diagnosis of fecal samples, blood, tissues and other excretions.		4	-	4
รวม	50	44	6	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.



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Section 6 Teaching Resources

1. Required Texts

- 1) Zajac AM, Conboy GA. Veterinary Clinical Parasitology, 8th ed. Black well publishing: Iowa. 2012.
- 2) Taylor MA, Coop ED, Wall RL. Veterinary Parasitology, 4th ed. Wiley-Blackwell 2015.
- 3) Jacobs D, Fox M, Gibbons L, Hermosilla C. Principles of Veterinary Parasitology, 4th ed. Wiley- Blackwell 2015.
- 4) Hendrix CM, Robinson ED. Diagnostic Parasitology for Veterinary Technicians. 5th ed. Missouri: Mosby Elsevier 2016.
- 5) Bowman DD. Georgis' Parasitology for Veterinarians (Georgis' Parasitology for Veterinarians), 11st ed. Saunders 2019.
- 6) Guadalupe MC, Bowman DD. Atlas of Parasitological Diagnosis in dogs and cats (volume I: Endoparasites). 1st ed. Servet 2018.
- 7) Saari S, Näreaho A, Nikander S. Canine Parasites and Parasitic Diseases. 1st ed. Academic Press 2018.
- 8) Mullen G, Durden L. Medical and Veterinary Entomology. 3rd ed. Academic Press 2018.

2. Suggested Materials: None

3. Other Resources (if any): None

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.



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Appendix

Relations between the course and the program

Table 1 Relations between the course and the PLOs

Course Name Veterinary Parasitology (Course Code) VSPA 333	PLOs							
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
	P	P		R			R	

Remarks: Show the level of the course management with the symbols I, R, P, and M. This must correspond to the curriculum mapping written in the TQF2

Table 2 Relations between CLOs and PLOs (ไม่ต้องระบุ subLos)

(Course Code) VSPA 333	PLOs							
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
CLO1 To describe the species, morphology and life cycle of parasites in livestock. (ruminants, pigs, poultry) and domestic animals (dogs, cats, horses) including arthropods, protozoa and helminths, as well as pathology and epidemiology.	1							
CLO2 To describe the important helminth species in livestock and domestic animals accurately categorized by host orienta-	1			4				



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tion and body systems including gastrointestinal, respiratory, circulatory, muscle, skin, eye, and reproductive systems.								
CLO3 To describe the important protozoa species in livestock and domestic animals according to body systems, including gastrointestinal, respiratory, circulatory, muscle, skin, and reproductive systems.	1			4				
CLO4 To describe the important protozoa species in livestock and domestic animals according to body systems, including gastrointestinal, respiratory, circulatory, muscle, skin, and reproductive systems.	1			4				
CLO5 To practice the laboratory diagnosis of fecal samples, blood, tissues and other excretions.	1	2					7	