



Program: Doctor of Veterinary Medicine
Course title Laboratory Animal Management
Course code VSPA 316

Academic degree level ☒ Bachelor ☐ Graduate Diploma ☐ Master
☐ Higher Graduate Diploma ☐ Doctor
Faculty / College / Institute: Faculty of Veterinary Science
Department of Preclinic and Applied animal science

TQF 3 Course Specification

Section 1 General Information

1. Course Code and Title

In Thai สปปส ๓๑๖ การจัดการสัตว์ทดลอง
In English VSPA 316 Laboratory Animal Management

2. Number of Credits

2 (2-0-4)
(Theory 2 hrs. Practice 0 hrs. Self-Study 4 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 Assist. Prof. Dr. Sasitorn Rungarunlert (SR) Department of Preclinical and Applied Animal Science
Tel.: 0-244114245-6 (1418) E-mail: sasitorn.run@mahidol.edu

4.1.2 Yada Akkhawattanakul, DVM (YA) Department of Veterinary Clinical Science and Public Health
Tel.: 0-24415245-6 (2282) E-mail: yada.akk@mahidol.edu

(Name – Surname – Department – Contact: Telephone Number – e-mail address)

4.2 Lecturers

4.2.1 Wantanee Rattanasak, DVM (WR) Special lecturer
Tel.: 0-24415235 E-mail: wantanee.rat@mahidol.ac.th

4.2.2 Assoc. Prof. Parntep Ratanakorn (PR) Special lecturer
Tel.: 0-2441-0613 E-mail: parntep.rat@mahidol.ac.th

4.2.3 Assist. Prof. Dr. Sasitorn Rungarunlert Department of Preclinical and Applied Animal Science
Tel.: 0-244114245-6 (1418) E-mail: sasitorn.run@mahidol.edu

4.2.4 Yada Akkhawattanakul, DVM (YA) Department of Veterinary Clinical Science and Public Health
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4.2.5 Kewwaree Hommuang, DVM (KH) Department of Veterinary Clinical Science and Public Health
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4.2.6 Thanee Sukklen (TS) National Laboratory Animal Center
Tel.: 0-24419342 (125) E-mail: thaneesukglin@hotmail.com

5. Semester/Class Level

5.1 Semester 2 / Class Level 3

5.2 Number of Students Allowed Approximately 80 Students

6. Pre-requisite

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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

29th November 2019

Section 2 Aims and Objectives

1. Course Goals

To establish a learning experience for students. Students will learn to appreciate ethics, welfare, basic biological knowledge of laboratory animals, standard animal care and use, heritability and production, management and preventive health care in laboratory animals, roles and responsibility of the veterinarian and other personnel, occupational health, and safety related to laboratory animals, including law, regulations and the policy of laboratory animals used in Thailand and global.

2. Objectives of Course Development/Revision

2.1 Course Objectives

This course aims to provide knowledge and abilities as follows:

1. Understanding the basic principles of laboratory animal ethics, roles and responsibilities of personnel involved in the care and use of laboratory animals.
2. Understanding basic biological knowledge of laboratory animals, standard care and management including law, regulations, and the policy of laboratory animals and, benefit of laboratory animals to improve the quality of life of humans and animals.
3. Understanding knowledge of occupational health and safety related to laboratory animals

2.2 Course-level Learning Outcomes: CLOs

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

1. CLO1 To describe the basic principles of laboratory animal ethics, roles and responsibilities of personnel involved in the care and use of laboratory animals.
2. CLO2 To describe basic biological knowledge of laboratory animals, standard care and management including law, regulations, and the policy of laboratory animals and, benefit of laboratory animals to improve the quality of life of humans and animals.
3. CLO3 TO describe knowledge of occupational health and safety related to laboratory animals

Section 3 Course Description and Implementation

1. Course Description

จรรยาบรรณการใช้สัตว์ สวัสดิภาพสัตว์ ทางเลือกอื่นในวิทยาศาสตร์สัตว์ทดลอง คุณภาพสัตว์ทดลอง การสืบสายพันธุ์และการเพาะขยายพันธุ์ ระบบการจัดการและการป้องกันการติดเชื้อในการเลี้ยงสัตว์ทดลอง ข้อมูลจำเพาะของสัตว์ทดลองประเภทต่าง ๆ การดูแลสัตว์ระหว่างการวิจัย ชีวอนามัยและความปลอดภัยของบุคลากรที่เกี่ยวข้อง

Ethics, welfare and alternative in laboratory animal science, laboratory animal quality, heritability and production, management and preventive health care in laboratory animal, the species specific of traditional laboratory animals, standard animal care during experimentation, occupational health, and safety

The course description should reflect the course goals, and it is a concept-based description instead of a teaching topic to facilitate the flexibility of adjusting the lesson plan to keep pace with changes.

2. Number of hours per semester

Theory (hours)	Practice (hours)	Self-study (hours)
30	-	60

3. Number of Hours per Week for Individual Advice

Students are anticipated to contract via course responsible lecturer for advised 1 hour per week

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 basic principles of laboratory animal ethics, roles and responsibilities of personnel involved in the care and use of laboratory animals
2. CLO2 To describe basic biological knowledge of laboratory animals, standard care and management including law, regulations, and the policy of laboratory animals and, benefit of laboratory animals to improve the quality of life of humans and animals
3. CLO3 To describe knowledge of occupational health and safety related to laboratory animals

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	Group discussion	Group work	MCQ	Short answer	Group reports
CLO1	/	X	X	/	/	X
CLO2	/	/	/	/	X	/
CLO3	/	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	Law and regulations of laboratory animals (Ethic, regulations, animal welfare, and IACUC)	2:00	0	Lecture: ppt	PR
2	Alternatives	2:00	0	Lecture: ppt	YA
3	Laboratory animal quality	2:00	0	Lecture: ppt	WR
4	Breeding and production of laboratory animals	2:00	0	Lecture: ppt	WR
5	Environmental factors consideration for animal research	2:00	0	Lecture: ppt	YA
6	Husbandry in laboratory animal facility	2:00	0	Lecture: ppt	YA
7	Hygiene and sanitation in laboratory animal facility	2:00	0	Lecture: ppt	KH
8	Veterinary medical care program	2:00	0	Lecture: ppt	YA
9	Basic biology and husbandry in Rodents	2:00	0	Lecture: ppt	KH
10	Basic biology and husbandry in non-rodents and large animals I	2:00	0	Lecture: ppt	KH
11	Basic biology and husbandry in non-rodents and large animals II	2:00	0	Lecture: ppt	KH
12	Occupational health and safety	2:00	0	Lecture: ppt	YA

Teaching Period	Topics/Details	Number of hours		Methods: Teaching Media	Lecturer
		Theory*	Practice**		
13	Laboratory animals and quality of life development I	2:00	0	Lecture: ppt Group discussion Individual work	SR
14	Laboratory animals and quality of life development II	2:00	0	Lecture: ppt Group discussion Individual work	SR
15	Facility tour: National Laboratory Animal Center	2:00	0	Demonstration and Laboratory practice Lecture: group work	YA, KH, TS
	Total hours of the entire semester	30	0		

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)
	MCQ	Group work	Individual work presentation	Group work	
CLO1 Describe the basic principles of laboratory animal ethics, roles and responsibilities of personnel involved in the care and use of laboratory animals	7	-	2	-	9

CLO2 Describe basic biological knowledge of laboratory animals, standard care and management including law, regulations, and the policy of laboratory animals and, benefit of laboratory animals to improve the quality of life of humans and animals	70	5	-	7	82
CLO3 Describe knowledge of occupational health and safety related to laboratory animals	7	2	-	-	9
รวม	84	7	2	7	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) Institute of Laboratory Animal Resources (ILAR), Guide for the Care and Use of Laboratory Animals. 8th ed. National Research Council: National Academy Press; 2011.
- 2) Clough G. Quality in laboratory animals. In: Tuffery AA, editors. Laboratory Animals: An introduction for new experimenters. Chichester: Wiley-Interscience; 1987. p79-97.
- 3) Olfert ED, Gross BM, McWilliam AA. Guide to the care and use of experimental animal. Canadian Council on Animal Care.1993
- 4) Wilson MS. Principles of animal husbandry. In: Tuffery AA, editors. Laboratory Animals: An introduction for new experimenters. Chichester: Wiley-Interscience; 1987. p99-116.
- 5) Barnett SW, editors. Manual of animal technology. Oxford, UK: Blackwell Publishing; 2007.
- 6) Svendsen P, Hau J. Handbook of laboratory animal science. Vol. 1. Boca Raton, FL: CRC press; 1994.
- 7) Centers for disease control and prevention, National institutes of health. Biosafety in microbiological and biomedical laboratory. 5th edition. HHS Publication No. (CDC) 21-1112; 2009.
- 8) Lynn C. Anderson, Glen Otto, Kathleen R. Pritchett-Corning, Mark T. Whary and James G. Fox. Laboratory animal medicine. 3rd ed. Elsevier Inc; 2015
- 9) Patrick S and Jason V. The laboratory rats. Taylor & Francis Group. 2012
- 10) Donna J.C. and Jennifer L.S. The laboratory guinea pig. Taylor & Francis Group. 2011

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.

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 Laboratory animal management (Course Code) VSPA316	PLOs							
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
	R			R	R		R	R

Table 2 Relations between CLOs and PLOs

(Course Code) VSPA316	PLOs							
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
CLO1 Describe the basic principles of laboratory animal ethics, roles and responsibilities of personnel involved in the care and use of laboratory animals								8.1 8.2 8.3
CLO2 Describe basic biological knowledge of laboratory animals, standard care and manage-	1.1 1.2			4.3	5.2 5.3 5.4		7.3	8.1 8.2 8.3

ment including law, regulations, and the policy of laboratory animals and, benefit of laboratory animals to improve the quality of life of humans and animals								
CLO3 Describe knowledge of occupational health and safety related to laboratory animals	1.2			4.3	5.2			