

Course Specification

Name of Institution Mahidol University
Campus/Faculty/Department Faculty of Veterinary Science

Section 1 General Information

1. Course Code and Title

VSPA 712 Biosafety and Biosecurity in Laboratory Management
 สพปส ๗๑๒ ชีวนิรภัยและความปลอดภัยด้านชีวภาพในการบริหารจัดการห้องปฏิบัติการ

2. Number of Credits

1 (1-0-2) Credits (lecture – laboratory – self-study)

3. Curriculum and Course Type

Program of Study Master of Science Program in Veterinary Biomedical Sciences
 Course Type Core Required Electives

4. Faculty Member in Charge of this Course and Advisor of Internship

4.1 Faculty Member in Charge of this Course

Name Dr. Kridsada Chaichoun
 Contact Department of Pre-Clinic and Applied animal science
 phone number 024415242 ext.1514 e-mail: kridsada.cha@mahidol.edu

4.2 Lecturers

1. Name Dr.Kridsada Chaichoun (KC)
 Contact : Department of Pre-Clinic and Applied animal science
 phone number 1514 E-mail: kridsada.cha@mahidol.edu
2. Name Assist.Prof.Norasuthi Bangphoomi (NB)
 Contact : Department of Pre-Clinic and Applied animal science
 phone number 1509 E-mail: norasuthi.ban@mahidol.edu
3. Name Assist.Prof.Dr. Boonrat Chantong Boonrat
 Contact Department of Pre-Clinic and Applied animal science
 phone number 1516 E-mail: boonrat.cha@mahidol.ac.th
4. Name Asst.Prof.Dr. Tawewan Issarankura Na Ayudhaya

Contact : Department of Pre-Clinic and Applied animal science
phone number 1521 E-mail: tawewan.tan@mahidol.edu e-mail:

5. Semester/The training experience required in the curriculum

Semester 2 / Class Level or year 1

6. Pre-requisite

none

7. Co-requisite

none

8. Venue of Study

Faculty of Veterinary Science, Mahidol University

9. Date of Latest Revision

2 January 2024

Section 2 Goals and Objectives

1. Course Goals

This course aims to provide knowledge and abilities as follows:

- 1) Understanding the fundamental of biosafety and biosecurity, risk assessment, management, and good laboratory practice for using of chemical and biological agents
- 2) Able to discuss advanced knowledge of biosafety and biosecurity,
- 3) Understanding and able to discuss the scope of the law and ethics in biosafety and biosecurity

2. Objectives of Course Development/Revision Field Experience Course

Update the curriculum to raise student achievement

3. Course-level Learning Outcomes: CLOs

This course aims to provide knowledge and abilities as follows:

- 1) CLO1 Understanding and able to discuss the topic of biosafety and biosecurity, risk assessment

2) CLO2 Understanding the good laboratory practice for using chemical and biological agents

3) CLO3 Understanding and able to discuss on risk assessment and risk management in laboratory

Section 3 Course Management

1. Course Description

VSPA 712 Biosafety and Biosecurity in Laboratory Management

สปส ๗๑๒ ชีวนิรภัยและความปลอดภัยด้านชีวภาพในการบริหารจัดการห้องปฏิบัติการ

2. Credit Hours per Semester

Lecture	1	Hour
Laboratory/Field Trip/Internship	-	Hour
Laboratory	-	Hour
Self Study	2	Hour

3. Number of hours that lecturers provide counseling and guidance to individual student

4

Section 4 Development of Students' Learning Outcome

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 Understanding and able to discuss the topic of biosafety and biosecurity, risk assessment

2. CLO2 Understanding the good laboratory practice for using of chemical and biological agents

3. CLO3 Understanding and able to discuss on risk assessment and risk management in laboratory

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 work/discussion	MCQ and short answer	reports	Group presentation
CLO1	X	X		X	X
CLO2	X	X		X	X
CLO3	X	X		X	X

Section 5 Teaching and Evaluation Plans

1. Teaching Plan

Week or No.	Topic	Hours			Teaching Methods / Media	CLOs	Lecturers
		Lecture	Laboratory	Self Study			
1	Principle of occupational health(1): occupational hazard, risk assessment, risk management	1	0	2	- Discussion - Assignment	1, 2	KC
2	Principle of occupational health (2): Occupational health and safety in veterinary practice, hazardous exposure and control/PPE	1	0	2	- Discussion - Assignment	1, 2	KC
3	Concept of Biosafety, Biosecurity	1	0	2	- Discussion - Assignment	1, 3	KC

4	Biohazard risk groups, handling with animal samples	1	0	2	- Discussion - Assignment	1, 3	KC
5	Laboratory facility and practice for risk group I, II, III, IV pathogens (WHO/OIE guideline)	1	0	2	- Discussion - Assignment	1, 3	KC
6	Laws related to Biohazards and Biosafety: Pathogens and Animal Toxin Act, B.E.2558 (2015)	1	0	2	- Discussion - Assignment	1, 3	KC
7	Safety procedure in analytical toxicology laboratory	1	0	2	- Discussion - Assignment	1, 2	BC
8	Important zoonotic diseases (1)	1	0	2	- Discussion - Assignment	3	NB
9	Important zoonotic diseases (2)	1	0	2	- Discussion - Assignment	3	NB
10	PPE, pathogen transportation, Health monitoring program	1	0	2	- Discussion - Assignment	1, 3	KC
11	Laboratory wastes and managements	1	0	2	- Discussion - Assignment	2	KC
12	Quality Management system for diagnostic laboratory (1): pre-analytical, analytical process, post-analytical process	1	0	2	- Discussion - Assignment	1	KC
13	Quality Management system for diagnostic laboratory (2): Seminar	1	0	2	- Discussion - Assignment	1	Lecturer Team
14	Quality Management system for diagnostic laboratory (3): Seminar	1	0	2	- Discussion - Assignment	1	Lecturer Team
15	Safety procedure in animal necropsy	1	0	2	- Discussion - Assignment	2, 3	TI
Total		15	0	30			

2. Evaluation Plan

Learning Outcomes	Evaluation Method			Weight (Percentage)
	presentation	Answering and discussion	Class attention	
CLO1 Understanding and able to discuss the topic of biosafety and biosecurity, risk assessment	10	30	5	45
CLO2 Understanding the good laboratory practice for using chemical and biological agents	5	15	5	25
CLO3 Understanding and able to discuss on risk assessment and risk management in laboratory	10	15	5	30
Total	25	60	15	100

Note*

1. Show the methods/tools and weight for measuring and evaluating each CLO.
2. Total the weight from every tool and CLO to 100
3. Verify the information to be consistent with the evaluation methods shown in Section 4 Table.

3. Measurement and evaluation

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.

4. 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 Materials and Resources

1. Textbooks and Main Documents

Laboratory Biosafety manual 4th edition, World Health Organization

2. Documents and Important Information

Pubmed, Science Direct, Google Scholar

3. Documents and Recommended Information

Pubmed, Science Direct, Google Scholar, MU library website

Section 7 Evaluation and Improvement of Course Management

1. Strategies for Evaluation of Course Effectiveness 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. Strategies for Evaluation of Teaching Methods

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. Improvement of Teaching Methods

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 Students' Learning Outcome

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.

5. Review and Plan to Improve Course Effectiveness

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.

Appendix

Relations between the course and the program

Table 1 Relations between the course and the PLOs

	PLOs					
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
VSPA 712 Biosafety and Biosecurity in Laboratory Management 1(1-0-2)	M	M		R	R	M

Program Learning Outcomes (TQF.2)

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 biomedical veterinary science and apply the beneficial output to develop laboratory practice and research study.

PLO 3 Integrate the theory and experiences together with scientific evidence 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.

Table 2 Relations between CLOs and PLOs

CLOs	PLOs					
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
CLO1 Understanding and able to discuss the topic of biosafety and biosecurity, risk assessment	R	R		R	R	R
CLO2 Understanding the good laboratory practice for using of chemical and biological agents	R	R		R	R	R
CLO3 Understanding and able to discuss on risk assessment and risk management in laboratory	M	M		R	R	M

Course schedule

ครั้งที่	Date	Time	Topic	Instructors
1	15 Jan 2024	13:00 – 13:50 pm	Principle of occupational health(1): occupational hazard, risk assessment, risk management	KC
2	15 Jan 2024	14:00 – 14:50 pm	Principle of occupational health (2): Occupational health and safety in veterinary practice, hazardous exposure and control/PPE	KC
3	15 Jan 2024	15:00 – 15:50 pm	Concept of Biosafety, Biosecurity	KC
4	22 Jan 2024	13:00 – 13:50 pm	Biohazard risk groups, handling with animal samples	KC
5	22 Jan 2024	14:00 – 14:50 pm	Laboratory facility and practice for risk group I, II, III, IV pathogens (WHO/OIE guideline)	KC

6	22 Jan 2024	15:00 – 15:50 pm	Laws related to Biohazards and Biosafety: Pathogens and Animal Toxin Act, B.E.2558 (2015)	KC
7	29 Jan 2024	13:00 – 13:50 pm	Safety procedure in analytical toxicology laboratory	BC
8	29 Jan 2024	14:00 – 14:50 pm	Important zoonotic diseases (1)	NB
9	29 Jan 2024	15:00 – 15:50 pm	Important zoonotic diseases (2)	NB
10	5 Feb. 2024	13:00 – 13:50 pm	PPE, pathogen transportation, Health monitoring program	KC
11	5 Feb. 2024	14:00 – 14:50 pm	Laboratory wastes and managements	KC
12	5 Feb 2024	15:00 – 15:50 pm	Quality Management system for diagnostic laboratory (1): pre-analytical, analytical process, post-analytical process	KC
13	12 Feb 2024	13:00 – 13:50 pm	Quality Management system for diagnostic laboratory (2): Seminar	Lecturer Team
14	12 Feb 2024	14:00 – 14:50 pm	Quality Management system for diagnostic laboratory (3): Seminar	Lecturer Team
15	12 Feb 2024	15.00-16.00 pm	Safety procedure in animal necropsy	TI
16	19 Feb 2024	13:00 – 16:00 am	Final exam	

Instructors:

KC, Dr. Kridsada Chaichoun

BC, Asst.Prof.Dr. Boonrat Chantong

NB, Asst.Prof.Dr. Norasuthi Bangphoomi

TI, Asst.Prof.Dr. Tawewan Issarankura Na Ayudhaya