

Course Specification

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

Section 1 General Information

1. Course Code and Title

VSCL 782 Ecology and Conservation Biology
สพวค ๗๘๒ นิเวศวิทยาและชีววิทยาการอนุรักษ์

2. Number of Credits

3 (2-3-5) 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

4.1.1 Name Dr.Nae Tanpradit

Contact Department of Clinical Science and Public Health

Phone number 2232 e-mail: nae.tan@mahidol.edu

4.2 Lecturers

4.2.1 Name Dr.Podjana Wattananit

Contact Department of Clinical Science and Public Health

Phone number 2202 e-mail: podjana.wat@mahidol.edu

4.2.2 Name Assist.Prof.Roschong Boonyarittichaikij

Contact Department of Clinical Science and Public Health

Phone number 2223 e-mail: roschong.boo@mahidol.edu

4.2.3 Name Dr.Nae Tanpradit

Contact Department of Clinical Science and Public Health

Phone number 2232 e-mail: nae.tan@mahidol.edu

4.2.4 Name Assist.Prof.Sarin Suwanpakdee

Contact Department of Clinical Science and Public Health

Phone number 1201 e-mail: sarin.suw@mahidol.edu

5. Semester/The training experience required in the curriculum

Semester 1 / 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

11 July 2023

Section 2 Goals and Objectives

1. Course Goals

This course aims to provide knowledge and abilities as follows:

1. **Understanding Ecosystem Dynamics:** Equip students with an understanding of ecosystem functions, interactions among species, and the impact of environmental changes on biodiversity. This includes studying population dynamics, and ecological principles that govern wildlife health and conservation efforts.
2. **Conservation Strategies and Policies:** Develop skills in formulating and implementing effective conservation strategies that address the challenges of habitat loss, species extinction, and climate change. Students should learn to analyze conservation policies at local, national, and international levels to promote sustainable practices.
3. **Field Research and Practical Skills:** Provide hands-on experience through fieldwork and research projects that enhance practical skills in ecological monitoring, data collection, and analysis. This goal emphasizes the

importance of empirical research in informing conservation practices and wildlife management decisions

2. Objectives of Course Development/Revision Field Experience Course

In order for students to create a comprehensive field experience that enriches students' educational journey in ecology and conservation biology.

3. Course-level Learning Outcomes: CLOs

This course aims to provide knowledge and abilities as follows:

1. Analyze Ecosystem Interactions: Students will be able to analyze and interpret the complex interactions within ecosystems, including species relationships, energy flow, and nutrient cycling, to assess their implications for wildlife health and conservation.
2. Evaluate Conservation Strategies: Students will evaluate and critique various conservation strategies and policies, considering their effectiveness, sustainability, and ethical implications in addressing biodiversity loss and habitat degradation.
3. Conduct Field Research: Students will demonstrate the ability to design and conduct field research projects that involve ecological monitoring, data collection, and statistical analysis, contributing to evidence-based conservation practices.
4. Communicate Scientific Findings: Students will effectively communicate scientific findings related to ecology and conservation biology through written reports, presentations, and discussions, targeting diverse audiences including stakeholders, policymakers, and the general public.

Section 3 Course Management

1. Course Description

(Thai) หลักการทางนิเวศวิทยา ความสัมพันธ์ระหว่างองค์ประกอบทางนิเวศวิทยา การศึกษารูปแบบของระบบนิเวศ หลักการและทฤษฎีทางชีววิทยาที่เกี่ยวข้องกับการอนุรักษ์ บทบาทขององค์กรด้านการอนุรักษ์ระดับชาติและนานาชาติ การอนุรักษ์ความหลากหลายทางชีวภาพ ผลกระทบจากมนุษย์ต่อระบบนิเวศ การฟื้นฟูระบบนิเวศ นโยบายการอนุรักษ์

(English) Principle of ecology, interaction between ecological factors, ecosystem study; conservation biology principles and theories; national and

international conservation organizations; biodiversity conservation; human impact on ecosystem; ecosystem recovery; conservation policy

2. Credit Hours per Semester

Lecture	2	Hour
Laboratory/Field Trip/Internship	3	Hour
Laboratory	-	Hour
Self Study	5	Hour

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

The lecturers allocate time to provide individual or group academic consultation and guidance to students outside the classroom for 3 hours per week (upon request). Appointments can be arranged via email.

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 Analyze Ecosystem Interactions within ecosystems, including species relationships, energy flow, and nutrient cycling, to assess their implications for wildlife health and conservation
2. CLO2 Evaluate Conservation Strategies and policies, considering their effectiveness, sustainability, and ethical implications
3. CLO3 Conduct Field Research contributing to evidence-based conservation practices.
4. CLO4 Communicate Scientific Findings related to ecology and conservation biology

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	Field practice	Assignments	Reports	Presentation
CLO1	X	X	X	X		
CLO2	X	X	X	X		X
CLO3	X	X	X		X	
CLO4	X	X				X

Section 5 Teaching and Evaluation Plans

1. Teaching Plan

No.	Topic	Hours			Teaching Methods / Media	CLOs	Lecturers
		Lecture	Laboratory	Self Study			
1	Introduction to Ecology	3	0	5	Lecture	1	NT
2	Marine ecology and conservation issue	2	0	5	Lecture	1	PC
3	Special Talk: Parasite diversity and impact of climate change on viviparous species	2	0	5	Lecture	1	Guest
4	Principles of Conservation Biology	3	0	5	Lecture	1,2	RB
5	Ecological abiotic factors and conservation issues	3	0	5	Lecture	1	NT
6	Urban ecology	3	0	5	Lecture	1,2	NT

7	Novel Conflict Resolution of Human-Wildlife Interactions	2	0	5	Class discussion	2	PW
8	Biodiversity & Health	2	0	5	Lecture	1,2	RB
9	Ecotourism impact on conservation	3	0	5	Lecture	1,2	NT
10	Landfill and waste ecology	2	0	5	Lecture	1,2	NT
11	Marine & mangrove ecosystem Field trip	0	14	5	Lecture	1,2,4	All
12	Urban park ecology field trip	0	7	5	Lecture	1,2	NT
13	Rama 9 museum trip	0	7	5	Lecture	1,2	All
14	Selected Ecology and Conservation topic presentation	3	0	5	Lecture	4	All
15	Population dynamic study	2	3	5	Presentation and discussion	1,3	NT
16	Forest ecology field trip Salakphra	0	14			4	NT
Total (hours)		30	45	75			

Notes: PW = Dr. Podjana Wattananit

SS = Assist.Prof.Sarin Suwanpakdee

RB = Assist.Prof. Roschong Boonyarittichaijij

NT = Dr.Nae Tanpradit

2. Evaluation Plan

Learning Outcomes	Evaluation Method			Weight (Percentage)
	Assignments	Reports	Presentation	
CLO1 Analyze Ecosystem Interactions within ecosystems	30		10	40
CLO2 Evaluate Conservation Strategies and policies, considering their effectiveness, sustainability, and ethical implications	30		10	40
CLO3 Conduct Field	-	5	5	10

Learning Outcomes	Evaluation Method			Weight (Percentage)
	Assignments	Reports	Presentation	
Research contributing to evidence-based conservation practices.				
CLO4 Communicate Scientific Findings related to ecology and conservation biology			10	10
Total	60	5	35	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

Begon, M., Townsend, C. R., & Harper, J. L. (2006). *Ecology: From individuals to ecosystems* (4th ed.). Blackwell Publishing.

Primack, R. B. (2010). *Essentials of conservation biology* (5th ed.). Sinauer Associates.

Meffe, G. K., & Carroll, C. R. (1997). *Principles of conservation biology* (2nd ed.). Sinauer Associates.

Sutherland, W. J., & Wordley, C. F. R. (2017). Evidence complacency hampers conservation. *Nature Ecology & Evolution*, 1(12), 1-2. <https://doi.org/10.1038/s41559-017-0373>

Hunter, M. L., & Gibbs, J. P. (2007). Fundamentals of conservation biology: A primer for the conservation professional. *Biological Conservation*, 137(3), 1-10. <https://doi.org/10.1016/j.biocon.2007.01.002>

2. Documents and Important Information

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3. Documents and Recommended Information

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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

Code/Name/Credits	PLOs					
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
VSCL 782 Ecology and Conservation Biology / 3	R	R	P	R	P	R

(2-3-5)						
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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 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.

Table 2 Relations between CLOs and PLOs

CLOs	PLOs					
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
CLO1 Analyze Ecosystem Interactions within ecosystems		R	R	P	R	
CLO2 Evaluate Conservation Strategies and policies, considering their effectiveness, sustainability, and ethical implications	R	R				R
CLO3 Conduct Field Research contributing to evidence-based conservation practices.					P	P
CLO4 Communicate Scientific Findings related to ecology and conservation biology			P			

Course schedule

WEEK/NO	TOPIC	DATE	TIME	INSTRUCTOR
1	Introduction to Ecology	Tuesday, August 15, 2023	13.00- 15.00	NT
2	Marine ecology and conservation issue	Tuesday, August 29, 2023	13.00- 16.00	PC
3	Special Talk: Parasite diversity and impact of climate change on viviparous species	Tuesday, August 29, 2023	15.00- 17.00	Guest
4	Principles of Conservation Biology	Tuesday, September 5, 2023	13.00- 16.00	RB
5	Ecological abiotic factors and conservation issues	Thursday, September 14, 2023	13.00- 16.00	NT
6	Urban ecology	Tuesday, September 19, 2023	13.00- 15.00	NT
7	Novel Conflict Resolution of Human-Wildlife Interactions	Wednesday, September 20, 2023	13.00- 15.00	PW
8	Biodiversity & Health	Wednesday, December 6, 2023	9.00- 12.00	RB
10	Ecotourism impact on conservation	Wednesday, December 6, 2023	9.00- 12.00	NT
11	Landfill and waste ecology	Thursday, November 9, 2023	9.00- 12.00	NT
9	Marine & mangrove ecosystem Field trip	25 -26 oct 2023		All
12	Urban park ecology field trip	Thursday, November 2, 2023		NT
13	Rama 9 museum	Thursday, November 16, 2023		All
14	Selected Ecology and Conservation topic presentation	Monday, December 18, 2023	9.00- 12.00	All
15	Population dynamic study	Wednesday, November 15, 2023	9.00- 12.00	NT
16	Forest ecology field trip Salakphra	20-21 Dec 2023		NT