

Course syllabus

Program of study	Biological Sciences	
	Mahidol University International College	
Course code	ICBI 442	
Course title	Practical marine ecology and conservation	
Number of credits	2 (0-4-2) [Lecture/Lab/Self-study]	
Prerequisite(s)	At the discretion of course instructor	
Type of course	Elective co-course for Ecology and Conservation Module Free elective	
Instructor	Dr Wayne Phillips	Email wayne.phi@mahidol.edu

Course Description

Laboratory and field procedures; experimental design; measuring abiotic conditions; assessing biotic interactions; behaviour; communities; diversity indices; similarity indices; biotic interactions; evaluating anthropogenic impacts; coral reef restoration & rehabilitation; coral reef conservation

Course Goals

Upon successful completion of this course, participants should be able to describe, explain, safely perform and record the results of methods and techniques to analyse biotic interactions and abiotic conditions of marine ecosystems to assess their health and resilience in the face of disruptive global climate change. Participants will undertake a socio-ecological study of the mangrove ecosystem in Chumphon and the coral reefs of Koh Tao, Suratthani for a better understanding of the importance of a more holistic approach to the use of the oceans, seas, and marine resources to ensure sustainable development and achievement of UN Sustainable Development Goal 14 – Life below water.

Course Learning Outcomes:

By the end of the course, participants will be able to

1. Possess and apply knowledge and technical skills in Practical Marine Ecology and Conservation
2. Independently retrieve qualitative and quantitative data and/or ideas to draw meaningful conclusions from scientific data/materials
3. Demonstrate systematic and logical thinking to set, plan and accomplish assigned project in a timely manner following the principles of scientific integrity
4. Demonstrate proficiency in oral and written communication of Practical Marine Ecology and Conservation
5. Demonstrate accountability and responsibility by applying concept of field study safety

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Field work schedule – dates to be confirmed

We will explore the mangrove forest at Chumphon National Park to observe common species, and identify their adaptations to life within the coastal ecosystem. On Koh Tao participants will be given the opportunity to practice and perfect simple snorkeling survey skills in the different reef systems around the island to determine the impact of tourism on coral reef resilience in the face of global climate change. Our investigations will help us understand the biological, ecological and economic benefits of conserving coral reefs and mangrove forests, especially in the face of global climate change, rising sea levels, and food insecurity.

Measurement of student achievement of CLOs

Learning Outcomes	Measurement method	Weight (%)
Possess and apply knowledge and technical skills in Practical Marine Ecology and Conservation	Field report	35
	Participation in activities	10
	Participation in discussions	5
Independently retrieve qualitative and quantitative data and/or ideas to draw meaningful conclusions from scientific data/materials	Field report	10
Demonstrate systematic and logical thinking to set, plan and accomplish assigned project in a timely manner following the principles of scientific integrity	Field report	10
	Participation in activities	10
Demonstrate proficiency in oral and written communication of Practical Marine Ecology and Conservation	Field report	5
	Participation in discussions	5
Demonstrate accountability and responsibility by applying concept of field study safety	Field report	5
	Participation in activities	5
Total		100

Field report (65%); participation in activities (25%); and participation in discussions (10%)

Evaluation of student achievement of CLOs

Student achievement will be evaluated according to the College and University standards.

Course Evaluation

Students can evaluate the course and instructor through normal College and University channels.

Teaching Materials and Resources

Brower, Zar and von Ende. Field and Laboratory methods for general ecology. McGraw Hill, 1997
English, Wilkinson and Baker. Survey manual for tropical marine resources. AIMS, 1997
Scientific articles chosen from relevant databases; Lecture handouts and links

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Grading Rubric

Participation in discussions 10%

Meaning Grade (GPA)	Outstanding A (4.0)	Competent B (3.0)	Adequate C (2.0)	Ineffective D (1.0)	Failed F (0.0)
In-class discussions [10%]	You always ask and answer questions. You lead discussions and naturally fit the role of team leader.	You often ask and answer questions but you are sometimes distracted by other things.	You sometimes get involved in discussions.	You sit back and let others do all the talking and thinking.	Who are you again?

Participation in activities 25%

Meaning Grade GPA	Outstanding A 4.0	Competent B 3.0	Adequate C 2.0	Ineffective D 1.0	Failed F 0.0
Participation in activities [60%]	You always ask and answer questions. You lead activities and naturally fit the role of team leader.	You often get involved and ask and answer questions during activities but you are sometimes distracted by other things.	You sometimes get involved in activities. You are often distracted by other things.	You sit back and let others do all the work. Your distractions are too important.	Who are you again?
Ability to perform necessary skills [40%]	You can easily perform the skills with excellent technique. You help other students.	You can perform the skills with good technique.	You can perform the skills but your technique needs more work.	You are unable to perform the skills.	You do not attempt the skills.

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Field report 65%

Meaning Grade GPA	Outstanding A 4.0	Competent B 3.0	Adequate C 2.0	Ineffective D 1.0	Failed F 0.0
Factual knowledge [20%]	You use the correct terminology and you use relevant facts correctly.	You use the correct terminology and facts most of the time.	You sometimes use incorrect terminology and your use of facts is sometimes irrelevant and/or wrong.	You often use incorrect terminology and you sometimes use irrelevant made-up “facts”.	You show no sign of knowing the correct terminology or any relevant facts.
Conceptual knowledge [20%]	You address the major concepts and it is clear you understand how the facts fit theory.	You know and address most of the relevant major concepts.	You address some of the major concepts but it is clear you do not fully understand them.	You address a major concept but get it wrong.	You show no sign of understanding the concepts discussed in class.
Procedural knowledge [15%]	It is clear you understand the procedures and you can discuss the pros and cons of different methods within the context of a study.	You have an acceptable level of practical knowledge about the procedures you used. You know other methods exist but do not elaborate or explain.	You have an adequate understanding of procedures you used but it is clear you do not know about other methods.	You have minimal understanding of the procedures you used and do not know about other methods.	You have little practical knowledge.
Content (facts) [30%]	You provide substantial, specific and illustrative examples that demonstrate a strong development of ideas.	You provide sufficiently developed examples with adequate elaboration and explanation of ideas.	You provide limited examples and could elaborate and explain more.	You provide examples that are superficial and/or minimal.	You provide incomplete or no examples. There is no development of ideas.

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Organisation [5%]	You present information in meaningful order, using effective transitions between ideas and concepts. You use an interesting introduction and closure.	You present information in a logical order using appropriate transitions between ideas. You provide an interesting introduction and closure.	You present information in predictable order and sometimes use appropriate transitions between ideas. You provide an adequate introduction and closure but miss some major points.	You present information in a predictable order but use few transitions between ideas. Your work is missing an introduction and/or closure.	You present information in a confusing and/or random way with no transitions between ideas. Your work is missing an introduction and closure.
Communication [10%]	You use interesting and precise vocabulary with a variety of complex sentences. Your writing is fluent and near error-free.	You use specific vocabulary and write with a variety of sentence structures. Your writing errors are minor and do not interfere with meaning.	You use appropriate vocabulary with some sentence structure variety. Your writing errors create confusion but the overall meaning is still clear.	You use simple vocabulary in simple predictable sentences. Your writing errors affect meaning.	You rely heavily on simple sentence structures and disregard writing conventions such as spelling, punctuation and grammar.