

SCBE 306 Marine Biology: Course information and Syllabus

1. Course Code and Title

In Thai วททส ๓๐๖ ชีววิทยาทางทะเล

In English SCBE 306 Marine biology

2. Number of Credits 4 (3-2-7) (Theory 3 hours, Practice 2 hours, Self-study 7 hours/week)

3. Curriculum and Course Type

3.1 Program of Study Bachelor of Science Program in Bioresources and Environmental
Biology (International Program)

3.2 Course Type Specific Course for SCBE (or free elective for International Programs)

4. Course Coordinator and Instructor

4.1 Course Coordinator

Dr. Pagkapol Pongsawakul

Department of Biology, Faculty of Science, Mahidol University

Email: pagkapol.pon@mahidol.edu B-411 (Phayathai); 02-2015488

4.2 Instructors

- Academic staff from the Department of Biology, Faculty of Science, Mahidol University and
Institute of Marine Science, Burapha University; and invited speakers

5. Semester/Class Level

5.1 Semester 1st semester/ 3rd or 4th year students

5.2 Number of Students Allowed Approximately.....35.....students

6. Pre-requisite

SCBE 201 General zoology

SCBE 202 General Zoology Laboratory

*or upon program committee approval

7. Co-requisites

none

8. Study Site Location

In-person at **SC1-161** (or online via Zoom)

Mahidol University, Salaya Campus

Institute of Marine Science, Burapha University (BIMS)

9. Class evaluation

- Class attendance	10%
- Midterm and final exams	40%
- Field trip participation	5%
- Assignments	35%
- Group Project (during field studies)	10%

Syllabus

Google Classroom: [n3dnyjwk](#)

SC1-161	Wed 10.30 am - 12.30 pm	
Aug 5	Introduction and Orientation	Dr. Pagkapol
(Aug 12)	Introduction to the Ocean and Observing the Ocean (clip)	Dr. Arachaporn
Aug 19	Ocean Motions	Dr. Arachaporn
Aug 26	Living Ocean	Dr. Arachaporn
Sep 2	Marine Invertebrate I	Dr. Warut
Sep 9	Marine Invertebrate II	Dr. Warut
	(1.30-3.30 pm) Marine Vertebrate I: Fishes and Reptiles	Dr. Jenjit
Sep 16	Marine Vertebrate II: Mammals	Dr. Thevarit
Sep 23	Marine Habitat: Seagrass and Mangrove Ecology	Khun Itsaret
	(1.30-3.30 pm) Marine Vertebrate III: Birds	Ajarn Phil
Sep 30	Midterm Exam (onsite)	
Oct 7	Marine Habitat: Coral Reef Ecology and Conservation	Dr. Lalita
Oct 14	Coral Reef Restoration and Artificial Reef (clip)	Dr. Pagkapol
Oct 21	Marine Habitat: Sandy Beach and Rocky Shores	Dr. Sumaetee
	(1.30-3.30 pm) Plankton Biology	Dr. Sumaetee
Oct 28	Field Trip Briefing	Dr. Pagkapol
	(1.30-3.30 pm) eDNA for Marine Ecomonitoring	Dr. Pagkapol
Nov 4	Marine Algae for Pharmaceutical and Cosmetics	Dr. Thanchanok
Nov 11	Marine Plastic Pollution	Dr. Toemthip
Nov 18	Citizen Scientist: Thai Whale Shark Project	Kirsty Magson
	(1.30-3.30 pm) Marine Oil Pollution and Bioremediation	Dr. Onruthai
Nov 25	Marine Ecotourism	Dr. Pagkapol
Dec 9	Final Exam (onsite)	

Instructors

Pagkapol Pongsawakul, Ph.D. (Biology, University of California San Diego)

Lecturer, Department of Biology, Faculty of Science, Mahidol University

Arachaporn Anutaliya, Ph.D. (Oceanography, Scripps Institute of Oceanography, University of California San Diego)

Postdoctoral Researcher, Applied Physics Laboratory, University of Washington

Warut Siriwut, Ph.D. (Biological Science, Chulalongkorn University)

Lecturer, Department of Biology, Faculty of Science, Mahidol University

Jenjit Khudamrongsawat, Ph.D. (Biology, University of Alabama)

Assoc. Professor, Department of Biology, Faculty of Science, Mahidol University

Philip D. Round (University of Aberdeen)

Emeritus Assoc. Professor, Department of Biology, Faculty of Science, Mahidol University

Thevarit Svarachorn, Ph.D. (Marine Science, University of Newcastle)

Lecturer, Dugong and Seagrass Research Station, Excellence Center for Biodiversity of Peninsular Thailand, Faculty of Science, Prince of Songkla University

Itsaret Pongthong

Fishery Biologist (Practitioner Level), Marine Resources Rehabilitation Subdivision, Marine Resources Conservation Division, Department of Marine and Coastal Resources, Ministry of Natural Resources and Environment

Lalita Putchim, Dr. rer. nat. (Marine Sciences, University of Bremen)

Fishery Biologist (Professional Level), Director, Academic and International Research Subdivision, Marine and Coastal Resources Research and Development Institute, Department of Marine and Coastal Resources, Ministry of Natural Resources and Environment

Sumaetee Tangwanchaoen, Ph.D. (Marine Biology, Scripps Institute of Oceanography, University of California San Diego)

Lecturer, Department of Botany, Faculty of Science, Chulalongkorn University

Thanchanok Sirirak, Pharm.D, Ph.D. (Pharmaceutical Science, Prince of Songkla University)

Assoc. Professor, Division of Pharmacognosy and Pharmaceutical Chemistry, Faculty of Pharmaceutical Sciences, Burapha University

Toemthip Poolpak, Ph.D. (Biology, Mahidol University)

Lecturer, Department of Biology, Faculty of Science, Mahidol University

Kirsty Magson (Bangor University)

Program Manager, New Heaven Reef Conservation Program, Koh Tao

Conservation Diver Master Trainer, Conservation Diver

Onruthai Pinyakong, Ph.D. (Biotechnology, The University of Tokyo)

Assoc. Professor, Department of Microbiology, Faculty of Science, Chulalongkorn University

Director, Center of Excellence in Microbial Technology for Marine Pollution Treatment

Tentative Field Trip Schedule

Date/Time	Topic/Activity	Location
Day 1	Sunday Dec 13, 2026	
7.15	Phayathai Van Loading	Between N and R Building
7.30	Depart from Phayathai via Salaya Campus	
8.15	Salaya Bus Loading	Between SC-2 and SC-3 Bus parking lot
8.30	Van and Bus Depart from Salaya at (Restroom Break at the Motorway Rest Area)	Transit
11.00 – 14.20	Aquarium Visit (Lunch on your own)	Bangsaen Aquarium
14.20	Bus Loading	Bangsaen Aquarium Parking
14.30 – 15.00	Transport to Mangrove Forest	Transit
15.00 – 16.00	Mangrove Ecology Visit Instructor: Dr. Pagkapol Pongsawakul	Centre of Expertise on Eco-tourism for Mangrove Conservation
17.00 - 19.00	Snorkeling Practice and Data Collection Practice Instructor: Dr. Pagkapol Pongsawakul	Hotel Pool

Day 2	Monday Dec 14, 2026	
8.30 - 09.00	Beach Activities Briefing	Hotel Lobby
09.00 – 11.00	Field Works (Beach Profiling and Water Quality Measurement)	Bangsaen Beach / Field
11.10	Depart for BIMS	
11.30 – 12.00	Lab Briefing Session; Sea Water <i>Vibrio</i> spp. Culture Demo and Practice	M 205
12.00 - 13.00	Lunch (not included)	
13.00 - 14.30 (45 min each)	Sea Water <i>Vibrio</i> spp. Culture Demo and Practice and Water Quality Analysis	Microbiology laboratory (L 107) Ecology Laboratory (Lab 110)
14.30 - 15.15	Lecture Session: Clown Fish Husbandry	M 205
15.15 – 16.00	Coral Husbandry-different types of corals	M 205
16.00 – 16.30	Coral Husbandry Facility Visit	Hatchery
16.30 – 17.00	Crown Fish Breeding Facility Visit	Hatchery

Day 3	Tuesday Dec 15, 2026	
7.30	Bus and Van Loading	Bangsaen Heritage Hotel
7.45 - 9.30	Depart for Field Trip	
10.00	Boat leaves from the Pier	
10.30 - 13.30	Marine Habitats – Coral Reef Ecology Instructor: Dr. Pagkapol Pongsawakul	Samaesarn Islands
12.00	Lunch	(Aj Pagkapol will take your lunch order beforehand)
13.30	Leave Samaesarn Islands	
14.00 - 15.00	Sea Turtle Conservation Instructor: Dr. Pagkapol Pongsawakul	Sea Turtles Conservation Center Royal Thai Navy
15.30 - 18.30	Coral Propagation and Conservation Instructor: Dr. Pagkapol Pongsawakul	Marine Science and Conservation Camp and Samaesarn Bay
19.00 - 20.30	Dinner	Samaesan Kitchen Seafood
20.30 - 21.30	Return to Hotel	

Day 4	Wednesday Dec 16, 2026	
8.20	Hotel Check-out Bus and Van Loading	
8.40	Depart for BIMS	Transit
9.00 - 10.00	Lecture Session: Marine resources: Current and sustainable utilization	M 205
10.00 – 10.30	Fish Dissection Briefing	M 205
10.30 – 11.45	Fish Dissection & Digestive System	Clownfish Breeding Ground
11.45 – 12.00	Note: Photographically verifying the Sea Water <i>Vibrio</i> spp. Culture results	Microbiology laboratory (L 107)
12:00 - 13:00	Lunch (not included)	
13:00 - 15:00	Group Presentation: Draft and Suggestion Instructor: BIMS staff Dr. Pagkapol Pongsawakul	Multipurpose Building
15.00 – 15.30	Closing and Departure for Phayathai or Salaya	M 205

Course information

Course Goals

This course provides an introduction to marine organisms and the physical and biological processes that affect them. The course begins with oceanography, marine biodiversity, marine habitats and the physical and chemical factors influencing marine organisms and their communities in marine environments. The course then transitions into an exploration of various marine organisms, as well as the physiological adaptations these organisms have to the marine environment.

Objectives of development/revision

Course Objectives

The aim of this course is to provide basic knowledge and practical skills for students so that they will be able to pursue research and study in marine biology and related fields in the future. The students are expected to be able to describe biological and physiological components of the ocean and identify common species found in the ocean. In addition, the students should be able to collect information, interpret data, and discuss the results as well as suggest an approach to solve environmental problems of the ocean.

Course-level Learning Outcomes (CLOs)

By the end of the course, students are able to

1. CLO1 Describe biological and physiological components of the ocean
2. CLO2 Identify common species found in the ocean
3. CLO3 Collect information, interpret data, and discuss the results
4. CLO4 Apply knowledge to suggest an approach to solve environmental problems of the ocean.

Course Description

Natural history of marine organisms, exclusive of protozoa and insects; types of environment in the ocean, with special reference to shallow tropical seas; the relation of biological distributions to the physical and chemical environment; the effects of environmental change; life cycles of marine animals; planktons and food chains and the effects on population change; the application of ecological techniques to local problems; field survey and laboratory exercises

2. Number of hours per semester

Theory (hours)	Practice (hours)	Self-study (hours)
45	30	105

3. Number of Hours per Week for Individual Advice

Instructors provide academic counseling and guidance to individual upon request during office hour (Monday-Friday).