THE MODULE HANDBOOK
FACULTY OF BIOLOGY

Marine Ecology

Module code	BIO 40303
Module level	2nd year of Undergraduate Program in Biology
Abbreviation, if applicable	-
Sub-heading, if applicable	-
Courses included in the module, if applicable	-
Semester/term	Odd
Module coordinator(s)	Prof. Tjut Sugandawaty Djohan, M.Sc.
Lecture(s)	Prof. Tjut Sugandawaty Djohan, M.Sc.
Language	Indonesia
Classification within the Curriculum	Elective course
Teaching format/class hours per week during the semester	This course is organized into one class and planned to have 14 teaching weeks and 2 weeks of examination.
Workload	Estimated working hour: 10,5 hours/week.
Credit points	2-1 credits
Requirements	Ecology (BIO 30302)
Learning goals/ competencies	**1. Knowledge and understanding** a. Water movement, and physic-chemical factors. b. Strucuture and diversities of marine ecosystems in relation to the sea-scape. c. The community of plankton, oceanic nekton, coral reef ecosystem, community of estuarine, mangrove, and intertidal. d. Relationship between human and productive fishing area and commercial species. e. Coral reef ecosystem, maritime culture, environmental pollution, climate change. f. Marine ecological concept in response to environmental problems and ecological services. g. of mangrove, seagrass, coral reef and opens-ea ecosystem in the sea scape. h. The importance of ecological llinkages between the healthy watershed, mangrove, coastal ecosystem, and open-sea management in the sea-scape.

	2. Ability/intellectual skill a. Compare the diversity of marine ecosystems in the sea-scape ecology. b. Analyze processes, dinamics, and development of coral reef ecosystem. c. Analyze the change of habitats in the ecosystem and their relation to anthropogenic activities. d. Explain the environmental problems, productivity, coastal areas in relation to the concept of marine ecology in sea scape setting and the healthy watershed ecosystem and brackhish estuary. **3. Practical skill** a. Plan and implement validly an experiment/ research in Biological field. b. Design and use of laboratory and field equipment. c. Analyze the results of the experiment and determine the validity and truth. d. Using the scientific literature and make notes effectively. e. Create and present a technical report scientifically. **4. Managerial and transferable skill** a. Organize and to conduct the study on marine ecology. b. To manage the time efficiently . c. To manage the marine ecological research-data from the study. d. To write simple marine ecological report on special topic. e. Working together in team to conduct the marine ecology research. f. Sensitive to marine environmental issues and its relation to anthropogenic activities. **5. Attitude** a. Have the curiosity to the concepts and problems in marine ecology. b. Appreciate and have the responsibility to his/her duty. c. Appreciate the ideas, concepts, and findings of other scientist. d. Sensitive to the issues of local, regional, and global marine ecology problems. e. Appreciate the conservation efforts in term of coral reef, sea grass, and mangrove ecosystems in relation to the healthy watershed ecosystem. f. Have moral conscience.
Content	The course will review ecological concepts, and discuss the physico-chemical factors, water movements, temperature profies, salinity, coastal and oceanic

	ecosystems, intertidal ecosystem, coral reef ecosystem, shelfsea ecosystem, estuarine ecosystem, mangrove ecosystems and teir roles in the fishery sea-scape, anthropogenic impact on the sea, ecological linkages between landscape and sea scape, healthy-wateshed ecosystem and coastal management in the island country, and climate change.
Study/exam achievements	1. Midterm: 25 % 2. Final examination: 50% 3. Assignment: 25 %
Forms of media	White board, LCD
Literature	1. Nybakken, J.W., and M. D. Bertnes 2004. *Marine biology: An ecological approach*. 6th edit. Pearson Education, Inc. Benjamin/Cummings Publ. San Francisco. 2. Sumich, J.L. 1992. *An introduction to the biology of marine life* 5th ed. Wm. C. 3. Brown Publ. *4.* English, S.C., Wilkinson, and V., Baker (Edit). 1994. *Survey manual for tropical marine* 5. *resources*. ASEAN-Australian Marine Science project. Australia 6. Selected *present scientific articles* from *the international journals*