



THE MODULE HANDBOOK
DOCTOR BIOLOGICAL SCIENCES STUDY PROGRAM
FACULTY OF BIOLOGY

SELECTED TOPIC FOR DISSERTATIONS

Aquatic Ecology

Course code	BIDB243029
Course level	Doctoral Program
Semester/ term	Odd/even
Course coordinator	Prof. Dr. rer. nat. Andhika Puspito Nugroho
Lecture(s)	Prof. Dr. rer. nat. Andhika Puspito Nugroho Siti Nurleily Marlina, Ph.D. Mukhlis Jamal Musa Holle, D.Phil.
Language	Indonesian/English
Classification within the Curriculum	Compulsory (Selected Topic For Dissertations)
Teaching format/ class hours per week during the semester	This course is planned to have 14 teaching weeks and 2 weeks of examination.
Workload	90 hours
Credits	2-0 credits / 3.6 ECTS
Requirements	-
Program Learning Outcome	<p>CPL 1.1.pon completing this program, the graduates demonstrate an attitude of being able to contribute to improving the quality of life in society, nation and state, and the progress of civilization based on Pancasila.</p> <p>CPL 2.2. After attending this program, graduates demonstrate an understanding of substantial and leading theory in the field of biology/biological resources in order to support education for sustainable development</p> <p>CPL 3.1. After completing this program, the graduates will be able to discover or develop new scientific theories/concepts/ideas in biology</p> <p>CPL 4.2. After participating in this program, graduates will be able to propose new solutions or recommend proposed solutions to solve biological resource problems in a sustainable manner through an interdisciplinary or multidisciplinary approach to fund deduction or induction.</p>
Course Learning Outcome	BIDB243029.1 By the end of this course, students will understand the fundamental concepts of aquatic ecology,



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	<p>encompassing both inland waters and marine ecosystems.</p> <p>BIDB243029.2 By the end of this course, students will be able to analyze and synthesize sampling techniques and data analysis methods in aquatic ecology research, particularly in relation to dissertation studies.</p> <p>BIDB243029.3 By the end of this course, students will be able to analyze theoretical and practical gaps in aquatic ecology research, particularly in relation to their dissertation studies</p> <p>BIDB243029.4 By the end of this course, students will be able to manage, lead, and develop research in the field of aquatic ecology.</p> <p>BIDB243029.5 By the end of this course, students will be able to solve problems in the field of aquatic ecology through inter- and multidisciplinary approaches.</p>
Course Description	<p>This course is designed to provide an in-depth understanding of both inland and marine aquatic ecosystems. It covers both fundamental and advanced principles, including the physical and chemical properties of water, water movement within ecosystems, energy flow, organismal adaptations particularly through traits-based approaches and functional diversity and the ecology of key aquatic ecosystem components (plankton, benthos, and nekton) across various aquatic ecosystem types. The course also explores ecological connectivity among different types of aquatic ecosystems.</p> <p>Contemporary issues and debates in aquatic ecology are also discussed. By the end of the course, students will analyze various sampling techniques and data analysis methods relevant to aquatic ecology, with the goal of refining their research methodologies for dissertation work. Furthermore, students will be challenged to develop and present a research proposal or case study, thereby strengthening the methodological and analytical skills necessary for conducting independent research and contributing scientifically to the field of aquatic ecology.</p>
Assessments	<p>The assessment for Selected Topic for Dissertations (Aquatic Ecology) is based on five components, with the respective criteria and weights:</p> <ol style="list-style-type: none">1. Mid-term Exam (20%)2. Final-term Exam (20%)3. PBL 1 (20%)4. PBL 2 (20%)5. PBL 3 (20%)



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**Study Media
and Literature**

Main

1. Sommer, U. 2023. Freshwater and Marine Ecology. Springer.
2. Dobson, M., & Frid, C. 2008. Ecology of aquatic systems. Oxford University Press.

Additional

3. Jones, I., J.P. Smol and R.G. Wetzel. 2023. Limnology: lake and river ecosystems 3rd edition. Academic Press.
4. Dodds, W. K. and M.T. Whiles. 2019. Freshwater ecology: concepts and environmental applications of Limnology 3rd edition. Elsevier.
5. Cole, G.A. and P. E. Weihe. 2015. Textbook of limnology. Waveland Press.
6. Bertness, M.D., Bruno, J.F., Silliman, B.R. and Stachowicz, J.J. eds., 2014. Marine community ecology and conservation. Sinauer Associates, Incorporated.
7. Levinton, J.S. 2021. Marine Biology: Function, Biodiversity, Ecology 6th edition. Oxford University Press.