



THE MODULE HANDBOOK
DOCTOR BIOLOGICAL SCIENCES STUDY PROGRAM
FACULTY OF BIOLOGY

SELECTED TOPIC FOR DISSERTATIONS

Ecotoxicology

Course code	BIDB243031
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 Specialization Courses
Teaching format/ class hours per week during the semester	This course is planned to have 14 teaching weeks and 2 weeks of examination.
Workload	1,125 hours/day 5 days/week 5,625 hours/week 16 Weeks/Semester total workload : 90 hours/3,6 ECTS
Credits	3.6 ECTS
Requirements	-
Program Learning Outcome	CPL 1.1. Upon 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 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 CPL 3.1. After completing this program, the graduates will be able to discover or develop new scientific theories/concepts/ideas in biology 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



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	sustainable manner through an interdisciplinary or multidisciplinary approach to fund deduction or induction
Course Learning Outcome	<p>BIDB243031.1 By the end of this course, students will have knowledge and understanding of the fundamental principles of ecotoxicology</p> <p>BIDB243031.2 By the end of this course, students will be able to advance knowledge and technology in the field of ecotoxicology, particularly in relation to dissertation research.</p> <p>BIDB243031.3 By the end of this course, students will be able to manage, lead, and develop research in the field of ecotoxicology.</p> <p>BIDB243031.4 By the end of this course, students will be able to solve problems in the field of ecotoxicology through inter- and multidisciplinary approaches.</p>
Course Description	<p>This course explores the scope of ecotoxicology, including the classification of toxicants, toxicant emissions, intra- and inter-compartment transport of toxicants, the fate of toxicants in individuals (bioaccumulation, bioconcentration, biodegradation) and ecosystems, toxicant fate models, toxicokinetics and toxicodynamics, biomarkers and bioindicators, and the effects of toxicants at the molecular, individual, population, and community levels. It also covers toxicity testing and biomonitoring.</p> <p>Each topic is discussed in reference to current developments in ecotoxicology, with an emphasis on real-world cases and issues. Through assignments and projects, students will identify and analyze ecotoxicological cases and propose appropriate solutions..</p>
Assessments	<p>The assessment for Selected Topic for Dissertations (Ecotoxicology) is based on four components, with the respective criteria and weights:</p> <ol style="list-style-type: none">1. Mid-term Exam (25%)2. Final-term Exam (25%)3. Project 1 (25%)4. Project 2 (25%)
Study Media and Literature	<p>Main</p> <ol style="list-style-type: none">1. Newman, M.C. 2015. Fundamental of ecotoxicology. CRC Press, Inc. USA. <p>Additional</p> <ol style="list-style-type: none">1. Manahan, S.E. 2013. Fundamentals of environmental and toxicological chemistry. CRC Press, Inc. USA.2. Walker, C.H., S.P. Hopkin, R.M. Sibly, and D.B. Peakall. 2001. Priciples of ecotoxicology. 2nd edition. Taylor & Francis, Inc. New York.



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3. Leeuwen, C.J.V. and J.L.M Herments (eds). 1995. Risk assessment of chemicals: an introduction. Kluwer Academic Publisher. Netherlands.
 4. Manahan, S.E. 1994. Environmental Chemistry. Sixth edition. CRC Press, Inc. USA.
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