THE MODULE HANDBOOK
DOCTOR BIOLOGY STUDY PROGRAM
FACULTY OF BIOLOGY

SELECTED TOPIC FOR DISSERTATIONS

Bioprocess and Bacterial Biomolecular

Course code	BIDB203167
Course level	Doctoral Program
Semester/ term	Odd/even
Course coordinator	Prof. Dr. Endah Retnaningrum, S.Si., M.Eng.
Lecture(s)	Prof. Dr. Endah Retnaningrum, S.Si., M.Eng. Prof. Dr. apt. Ratna Asmah Susidarti, M.S.
Language	Indonesian/English
Classification within the Curriculum	Compulsory
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	Receiving approval from the Supervisory Team.
Program Learning Outcome	CPL 2.1.Upon completing this program, the graduates demonstrate an understanding of of the scientific philosophy of biology which is related in depth to structure, function, diversity, reproduction, evolution and engineering of biological systems. 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
Course Learning Outcome	BIDB203167.1 By the end of this course, students gain knowledge and understanding of bacterial diversity from both macroenvironment and microenvironment, including exploration, screening, polyphasic identification, and their applications for human welfare. BIDB203167.2 By the end of this course, students will be able to analyze analyze the cellular, metabolic, and genetic characteristics of bacteria and apply this knowledge

	to assess bacterial communities, particularly in relation to their dissertation research BIDB203167.3 By the end of this course, students will be able to manage, lead, and develop research utilizing bacterial strains with superior traits for bioprocesses in the production of various products, including bacterial enzymes, bioactive compounds, and molecular transformation processes BIDB203167.4 By the end of this course, students will be able to solve human life challenges through bioprocess technology related to the design and development of equipment and processes for producing various products such as functional foods, pharmaceuticals, chemicals, agricultural products, and wastewater treatment.
Course Description	This course studies bacterial diversity from both macroenvironment and microenvironment, including exploration, screening, polyphasic identification, and their applications for human welfare. The study covers cellular, metabolic, and genetic characterization useful for assessing bacterial communities. Additionally, the course examines the utilization of bacterial strains with superior traits in the development of bioprocesses for producing various products, including bacterial enzymes, bioactive compounds, and molecular transformation processes. The course also reviews bioprocess technology related to the design and development of equipment and processes for manufacturing products such as functional foods, pharmaceuticals, chemicals, agricultural products, and wastewater treatment. Recent research related to bacterial diversity is incorporated into each topic, enabling students to analyze and solve relevant problems.
Assessments	The assessment for Selected Topic for Dissertations (Bioprocess and Bacterial Biomolecular) is based on two main components, with the respective criteria and weights: A. Participatory Activity (20%) • Final-Term Exam (30%) • Participation (10%) B. Project (80%) • Mid-Term Exam (30%) • Stuctured Assigment/Task (30%) • Project Result/Case Study/Project Based Learning result (20%)
Study Media and Literature	**Main** 1. Madigan, M.T., Martinko, J.M. & Parker, J. 2000. Biology of Microorganisms, Prentice Hall International,Inc.

	Additional 2. Sivasubramanian, V. 2018. Bioprocess Engineering for a Green Environment. Taylor & Francis Group. 3. Reddy, S. M., Singaracharya, M. A. & Girisham, S. 2021. Microbial Diversity: Exploration & Bioprospecting. Scientific Publishers 4. Kartan, P. 2017. Advances in Bioprocess Technology. Delve Publishing