THE MODULE HANDBOOK
DOCTOR BIOLOGY STUDY PROGRAM
FACULTY OF BIOLOGY

SELECTED TOPIC FOR DISSERTATION

Applied Palynology

Course code	BIDB203193
Course level	Doctoral Program
Semester/ term	Odd/even
Course coordinator	Prof. Dr. Ratna Susandarini, M.Sc.
Lecture(s)	Prof. Dr. Ratna Susandarini, M.Sc. Prof. Dr. L. Hartanto Nugroho, M.Agr. Dr. Yekti Asih Purwestri, M.Si.
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 1.2. After completing this program, the graduates will be able to demonstrate honesty, responsibility, self-confidence, emotional maturity, ethics, and awareness of being a lifelong learner; CPL 2.1. After attending this program, graduates will be able to contribute to the development and practice of the field of biology through scientific research based on scientific principles and ethics through interdisciplinary, multidisciplinary, or transdisciplinary approaches in solving problems in the field of biology; CPL 2.3. After completing this program, the graduates will be able to manage and formulating valid and accountable research data by upholding academic integrity and prioritizing anti-plagiarism CPL 3.2. 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.4.3. After completing this program, the graduates will be able to apply the philosophy of biological systems in developing biological concepts in the areas of food, health, bioenergy, biomaterial and/or the environment.
Course Learning Outcome	BIDB203193.1 By the end of this course, students will be able to correctly apply the concepts and working principles of Plant Biosystematics and Experimental Systematics methods to reveal biodiversity through research at the doctoral level. BIDB203193.2 By the end of this course, students will be able to determine the types of data and appropriate data collection methods according to the research objectives of their dissertation within the scope of Plant Biosystematics.. BIDB203193.3 By the end of this course, students will be able to evelop or modify and innovate research methods to achieve the objectives of their dissertation research within the scope of Plant Biosystematics. BIDB203193.4 By the end of this course, students will be able to determine and perform appropriate data analysis methods and interpret the results to address research problems and achieve the objectives of their dissertation within the scope of Plant Biosystematics, including proficiency in using software tools for phenetic and phylogenetic analysis.
Course Description	This course covers topics related to Pollen Biology, Melissopalynology, Honey Phytochemistry, and Honey Biochemistry, with content tailored to the students' dissertation topics. The general topics include Pollen Characteristics, Applications of Palynology, Physicochemical Analysis of Pollen Products, Analysis of Primary and Secondary Metabolites in Pollen Products, Pollen and Nectar in Honey, Pollen Analysis in Honey, and Qualitative and Quantitative Methods of Pollen Analysis.

Assessments	The assessment for Selected Topic for Dissertation (Applied Palynology) is based on five components, with the respective criteria and weights: A. Assignment (10%) B. Presentation (10%) C. Mini Project (30%) D. Mid-term Exam (20%) E. Final-term Exam (30%)
Study Media and Literature	**Main:** • D'Albore GR. 2009. Textbook of Melissopalynology. Apimondia Publishing House • Hooper T. 2008. Guide to Bees & Honey. Northern Bee Book Publishing • McKenzie K. (Editor). 2023. The Illustrated Encyclopedia of Palynology. Callisto Reference • Niranjan D. 2017. Natural Products Chemistry. Write And Print Publications • Goncalves RE and Pinto MC (Editors), 2012. Natural Products: Structure, Bioactivity and Applications. Nova Science Publishers. **additional:** • Scientific journals on Palynology and Natural Peoducts • Pollen Databases