



THE MODULE HANDBOOK

Magister Biology Study Program

FACULTY OF BIOLOGY

POLLEN DIVERSITY AND PHYTOCHEMISTRY

Course code	BIMB 202237
Course level	Magister
Semester/ term	Even
Course coordinator(s)	Dr. Ratna Susandarini, M.Sc.
Lecture(s)	1. Dr. Yekti Asih Purwestri, M.Si. 2. Prof. Dr. L. Hartanto Nugroho, M.Agr.
Language	English and Indonesian
Classification within the Curriculum	Elective
Teaching format/ class hours per week during the semester	This course is organised in one class and planned to have 14 teaching weeks and 2 weeks of examination.
Workload	Estimated working hour: 2 credits of theory and 1 credit of laboratory work.
Credits	2 – 1 credits
Requirements	-
Program Learning Outcome	<p>KN1: The graduates are demonstrating knowledge and comprehend biological theories, includes all aspects of biological studies at various levels in the organization of life</p> <p>GS1: The graduates are able to develop logical, critical, systematic, and creative thinking through scientific concept and research</p> <p>SS2: The graduates are able to solve problems related to biological resources through an inter- and / or multidisciplinary approaches beneficial to society and scientific community</p>
Course Learning Outcome	<p>CLO 1: Students comprehensively understand theoretical bases and concepts of relationships of Biological resources in nature.</p> <p>CLO 2: Students mastering technique and methods relevant for conducting studies in the fields and laboratory in pure and applied palynological research.</p> <p>CLO 3: Students are able to plan and conduct research on pure and applied palynology.</p>



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	CLO 4: Students are able to analyze data and make appropriate interpretation in the form of scientific writing.
Course Description	This course covers topics on morphological and phytochemical characteristics of pollen and pollen products in applicable to Biology, health science, food science, agriculture, and environmental science. Course materials consisted of Principles of palynological research, Diversity of pollen in plant taxa, Methods of collecting pollen samples, Methods of preparing microscopic slides from various pollen samples, Melissopalynology, Constructing pollen spectrum and pollen diagram, Phytochemical analysis of pollen products (beebread), Analysis of antioxidant activity of pollen products (beebread), Diversity of secondary metabolites of pollen, Analysis of phenolics and flavonoid of pollen products (beebread), Aeropalynology, Analysis on qualitative and quantitative pollen data.
Assessments	Quiz, Mini project, Assignment, Exam, Practical work.
Study Media	Power point, Lecture notes, Handout and Manual for Practical Work, Video; articles from scientific journals
Literature	<ol style="list-style-type: none">1. Bradbear N. 2009. Bees and their role in forest livelihoods: A guide to the services provided by bees and the sustainable harvesting, processing and marketing of their products. Non-wood Forest Products 19. FAO-UN.2. Caoulton E. & Agasshe SN. 2009. Pollen and Spores: Application with Special Emphasis on Aerobiology and Allergy. 1st Ed. CRC Press.3. d'Albore GR. 1998. Textbook of Melissopalynology. Apimondia Publishing House.4. Fægri K. & Iversen J. 1989, Textbook of Pollen Analysis, New York, John Wiley and Sons. Inc.5. Krzywinski, K.; Faegri, K; Iversen, J.; Kaland, P. E. 2000. Textbook of Pollen Analysis. The Blackburn Press.6. Pande S. & Jain S. 2014. Plant Resources Utilisation: Palynology and Biostatistics. Rastogi Publications.7. Rosas, S. 2012. An Introduction to Palynology. World Technologies.7. Relevant articles from scientific journals for case studies