



THE MODULE HANDBOOK

Magister Biology Study Program

FACULTY OF BIOLOGY

OMICS

Course code	BIMB202121
Course level	Magister
Semester/ term	Even
Course coordinator(s)	Dr. Tri Rini Nuringtyas, M.Sc.
Lecture(s)	Dr. Yekti Asih Purwestri, M.Si. Dr. Rarastoeti Pratiwi, M.Sc. Dr. Woro Anindito Sri Tunjung, M.Sc.
Language	Indonesian
Classification within the Curriculum	Compulsory
Teaching format/ class hours per week during the semester	This course is organised into one classes and planned to have 14 teaching weeks and 2 weeks of examination.
Workload	Estimated working hour: 2 credits of theory
Credits	2-0 credits
Requirements	-
Program Learning Outcome	<p>CPL KN1 The graduates are demonstrating knowledge and comprehend biological theories, includes all aspects of biological studies at various levels in the organization of life (Knowledge);</p> <p>CPL KN2. The graduates are demonstrating knowledge and comprehend biological system and bio-engineering methods to solve tropical biodiversity problems (Knowledge)</p> <p>CPL GS1. The graduates are able to develop logical, critical, systematic, and creative thinking through scientific concept and research (General Skills);</p> <p>CPL GS2. The graduates are able to manage research data and make decisions in solving biological problems based on analytical or experimental studies and critical analysis of information (General Skills)</p>
Course Learning Outcome	<p>Understand knowledge of Omics as a comprehensive approach to biological systems by applying knowledge of the basic principles of genomics, transcriptomics, proteomics and metabolomics as well as the analytical methods of each omics to understand their application in various fields of life science</p> <p>Integrate basic knowledge of omics to develop life science</p>



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	<p>Understand and interpret data in scientific journals in the OMICs field</p> <p>Using a variety of scientific literature to analyze problems in the OMICs field</p> <p>Communicating scientific papers in the field of OMICs in writing and orally with impressions</p>
Course Description	<p>This course aims to provide an understanding of biological processes through the integration of omics studies (omics). This subject will discuss omika applications which include: genomics, transcriptomics, proteomics and metabolomics as well as related analysis techniques. Each aspect of omika includes discussion of basic knowledge, methodology / analysis techniques and various examples of applications in biological research. Further, the methodology / analysis technique will be discussed regarding the Omika research design, sample preparation and preparation, the necessary instrumentation and data analysis on a large scale.</p>
Assesments	<ol style="list-style-type: none">1. Midterm: 35%2. Final examination: 35%3. Quiz: 5%4. Assignment: 10%5. Presentation: 15%
Study Media	Computer and/or gadget, Journal
Literature	<ol style="list-style-type: none">1. Textbook<ol style="list-style-type: none">a. Fundamentals of Advanced Omics Technologies: From Genes to Metabolites th 2014 , editor Caroline Simo, Alejandro Cifuentes, Virginia Garcia Canas Elsevierb. The evolution of protein chemistry to proteomics. Pengarang Roger L Lundblad, 2006, Taylor and Francisc. Omics Application in Crop Science Pengarang Deb Malya Barth th 2014. Taylor and Francis2. Book chapter<ol style="list-style-type: none">a. NMR-based metabolomics: Understanding plant chemistry and identification of biologically active compounds. Jahangir, M., Nuringtyas, T.R., Ali, K., Wilson, E.G., Choi, Y.H. and Verpoorte, R., 2018. NMR-based metabolomics: Understanding plant chemistry and identification of biologically active compounds. In NMR-based Metabolomics (pp. 246-263).3. Related journal publications.