THE MODULE HANDBOOK

Magister Biology Study Program

FACULTY OF BIOLOGY

CULTURE COLLECTION AND MICROBIAL TECHNIQUE

Course code	BIMB20221
Course level	Magister
Semester/ term	Odd
Course coordinator(s)	Dr. Endah Retnnaingrum, M. Eng
Lecture(s)	1. Dr. Endah Retnnaingrum, M. Eng 2. Dr. Miftahul Ilmi, M. Si
Language	English
Classification within the Curriculum	Compulsory Subjects for Laboratory
Teaching format/ class hours per week during the semester	This course is organized into 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	CPL AT1: The students are intended to internalize the academic values, norms, and ethics as well as demonstrate independent, responsible attitudes in their field of expertise (Attitude) CPL KN2: The graduates are demonstrating knowledge and comprehend biological system and bio-engineering methods to solve tropical biodiversity problems (Knowledge) CPL GS1: The graduates are able to develop logical, critical, systematic, and creative thinking through scientific concept and research (General Skills) CPL SS1:The graduates are able to conduct research in the field of biology independently or in groups, and able to solve various biological-related problems (Specific Skills)
Course Learning Outcome	CPMK1: Students are able to cultivate, handle and preserve microbial culture collections CPMK2: Students are able to understand and be able to choose the right technique in characterizing microbial culture collections CPMK3: Students are able to analyze microbial characters and explain the relationship between their characters, microbial activities, diversities and distributions

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Course Description	Culture Collection and Microbial Technique course is compulsory subjects for the Microbiology Laboratory. This course equips students to be able to understand, explore and practice microbiological methods. Several laboratory procedures including the safety of laboratory use, biosafety, and handling of research waste are given to students as research principles for the object of microbial study. Microbes are studied at the cellular level through several pure culture techniques. The study of microbial growth in various types of media is studied more deeply to understand microbial cell metabolism. The cellular and molecular characteristics of microbes are analysed to understand the role of microbes in nature and to further develop cell factory systems. Several assay methods were studied in cell factory systems in the form of proteins, lipids, glucose and vitamins as well as molecular techniques such as PCR and electrophoresis. The principles and processes of preserving microbial cultures are also studied to maintain the properties of microbial cultures when used in research or further applicative activities so that they can be sustainable.
Assesments	1. Quiz : 5 2. Assigment 10 3. Midterm exam : 40 4. Final exam 40
	Notebook and LCD
Literature	1. Cocolin, L., Ercolini, D. 2008. Molecular Techniques in the Microbial Ecology of Fermented Foods. Springer Science+Business Media, LLC, 233 Spring Street, New York, NY10013, USA. 2. Larry Snyder, L., Peters, J. E., Henkin, T. M., Champness, W. 2007. Molecular Genetic of Bacteria. ASM Press, P.O. Box 605, Herndon, VA 20172, USA 3. Leboffe, M. J., Pierce, B. E. 2011. A Photographic Atlas for the Microbiology Laboratory. 4th Ed. Morton Publishing Company, USA. 4. Kar, A. 2008. Pharmaceutical Microbiology. New Age International (P) Ltd., Publishers, New. Delhi. 5. Michael T. Madigan, MT., Brock, T., Martinko, J., Clark, D. P., Dunlap, P. 2019. Brock Biology of Microorganisms. 15th Ed. Pearson/Benjamin Cummings