



UNIVERSITAS NEGERI YOGYAKARTA

FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF MATHEMATICS EDUCATION

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Bachelor of Education in Biology

MODULE HANDBOOK

Module name:	Labwork in Microbe Diversity
Module level,ifapplicable:	Undergraduate
Code:	BIP6117
Sub-heading,ifapplicable:	-
Classes,ifapplicable:	-
Semester:	Odd
Module coordinator:	Dr. Bernadetta Octavia, M.Si
Lecturer(s):	Dr. Bernadetta Octavia, M.Si., Anna Rakhmawati,M.Si
Language:	Bahasa Indonesia
Classification within the curriculum:	Compulsory Course
Teaching format / class hoursperweekduring the semester:	100 minuteslectures, 120 minutes structured activities, and 120 minutes individual studyper week
Workload:	Total workload is 91 hours per semester which consists of 100 minuteslectures, 120 minutes structured activities, and 120 minutes individual study per weekfor 16 weeks.
Creditpoints:	1SKS (2ECTS)
Prerequisites course(s):	Ecology
Program Learning Outcomes:	PLO 4. Mastering basic Biology and other relevant knowledge with mathematics and natural sciences. PLO 7. Being able to do independent laboratory work and fieldwork.
Course Outcomes	After taking this course, the students have ability to: CO1. Mastering the tools and materials needed in the laboratory work of Microbial Diversity. CO2. Apply aseptic techniques to study microorganisms. CO3. Making microorganism growth media. CO4. Applying the method of sterilizing tools and materials used for the isolation of microorganisms. CO5. Isolating bacterial from various sources. CO6. Able to use techniques and skills to make pure cultures isolate

	<p>bacteria.</p> <p>CO7. Characterizing phenotypic of bacterial isolates</p> <p>CO8. Analyze information and data and be able to take responsibility for the achievement of group work.</p> <p>CO9. Counting of bacteria.</p> <p>CO10. Create experimental designs about to the role of microorganisms</p>															
Content:	Practicing skills in applying basic techniques in studying microorganisms, including aseptic techniques, isolation techniques from mixed culture of microorganisms, phenotypic characterization and bacterial identification; counting bacteria and designing experimental designs related to the role of microorganisms, especially bacteria.															
Study/examachievements:	<p>The final mark will be weight as follow:</p> <table border="1"> <thead> <tr> <th>No</th> <th>CO</th> <th>Assessment Object</th> <th>Assessment Technique</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CO1 to CO10</td> <td>Observed attitudes , knowledge, and skills</td> <td>Survey, test, rubrics and manuals</td> <td>100%</td> </tr> <tr> <td colspan="4">Total</td> <td>100%</td> </tr> </tbody> </table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO1 to CO10	Observed attitudes , knowledge, and skills	Survey, test, rubrics and manuals	100%	Total				100%
No	CO	Assessment Object	Assessment Technique	Weight												
1	CO1 to CO10	Observed attitudes , knowledge, and skills	Survey, test, rubrics and manuals	100%												
Total				100%												
Formsof media:	Real objects, model, multimedia															
Reference:	<p>A. Miller, G.T. 2016. <i>Environmental Science</i>. 15th Edition. Cencage Learning, Inc.</p> <p>B. Miller, Jr.G.T.and Spoolman, S.E.2008. <i>Living in the Environment: Concepts, Connections, and Solutions</i>, 16th Edition. Cencage Learning, Inc.</p> <p>C. Mitchell, B. 1997. <i>Resources and Environmental Managemnet</i>. England: Longman</p> <p>D. Soemarwoto, O. 1994. <i>Ekologi, LingkunganHidupdan Pembangunan</i>. Jakarta: PenerbitDjambatan.</p> <p>E. Soemarwoto, O. 2004. <i>AturDirisendiri, ParadigmaBaruPengelolaanLingkungan Hidup</i>. Yogyakarta: GadjahMada University Press.</p> <p>F. Fandeli, C. 2012. <i>AnalisisMengenaiDampakLingkungan, PrinsipDasardalam Pembangunan</i>. Yogyakarta: GadjahMada Press.</p> <p>G. Books and articles on animal and plant ecology</p>															

PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
CO1							√					
CO2				√								
CO3				√								
CO4				√								
CO5				√								
CO6				√			√					
CO7							√					
CO8							√					
CO9							√					
CO10							√					