



## 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:	Laboratory Work in Environmental Sciences
Module level, if applicable:	Undergraduate
Code:	BIO6117
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	Even
Module coordinator:	Dr. Tien Aminatun
Lecturer(s):	Prof. Dr. IGP Suryadarma, Dr. Ir. Suhartini, Dr. Tien Aminatun
Language:	Bahasa Indonesia
Classification within the curriculum:	Obligatory Course
Teaching format / class hours per week during the semester:	100 minutes lectures, 120 minutes structured activities, and 120 minutes individual study per week
Workload:	Total workload is 91 hours per semester which consists of 100 minutes lectures, 120 minutes structured activities, and 120 minutes individual study per week for 16 weeks.
Credit points:	1SKS (2 ECTS)
Prerequisites course(s):	Ecology
Program Learning Outcomes:	4. Mastering basic Biology and other relevant knowledge with mathematics and natural sciences 7. Being able to do independent laboratory work and fieldwork
Course Outcomes	After taking this course, the students have ability to: CO1. Identify the objectives of practicum and fieldwork and master the methods to real the objectives CO2. Understand the concept of environment as a system and its

	<p>implication in a real life</p> <p>CO3. Elaborate the real environmental issues with empiracal proofs and solutions</p> <p>CO4. Identify the environmental problems caused by waste and recognize the technology for solid waste management</p> <p>CO5. Identify the environmental problems related to management and conservation of natural source and its solutions</p> <p>CO6. Analyze the environmental problems related to negative impacts of development and make a group project about environmental assessment by working together with related institution to analyze the effects to the environments</p> <p>CO7. Work independently and collaboratively in group discussion activities and present the results</p>															
Content:	This course discusses the components of environmental system and its relationship, real problems and solutions including studying about natural and artificial environmental systems, water pollution and group projects.															
Study / exam achievements:	<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 CO7</td> <td>Observed attitudes , knolwedge, and skills</td> <td>Survey, test, rubrics and manuals</td> <td>100%</td> </tr> <tr> <td colspan="4" style="text-align: right;">Total</td> <td>100%</td> </tr> </tbody> </table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO1 to CO7	Observed attitudes , knolwedge, and skills	Survey, test, rubrics and manuals	100%	Total				100%
No	CO	Assessment Object	Assessment Technique	Weight												
1	CO1 to CO7	Observed attitudes , knolwedge, and skills	Survey, test, rubrics and manuals	100%												
Total				100%												
Forms of media:	Real objects, model, multimedia															
Reference:	<p>A. Miller, G.T. 2016. <i>Environmental Science</i>. 15<sup>th</sup> 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>, 16<sup>th</sup> 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, Lingkungan Hidup dan Pembangunan</i>. Jakarta: Penerbit Djambatan.</p> <p>E. Soemarwoto, O. 2004. <i>Atur Diri sendiri, Paradigma Baru Pengelolaan Lingkungan Hidup</i>. Yogyakarta: Gadjah Mada University Press.</p> <p>F. Fandeli, C. 2012. <i>Analisis Mengenai Dampak Lingkungan, Prinsip Dasar dalam Pembangunan</i>. Yogyakarta: Gadjah Mada 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
C01							√					
C02				√								
C03				√								
C04				√								
C05				√								
C06				√			√					
C07							√					