

## Module Handbook of Microbial Biodiversity

Module designation	The Microbial Biodiversity Course is an elective course intended for students of the Agricultural Microbiology study program, Faculty of Agriculture. This course discusses and learns about definitions, significance, criteria and methods for determining the degree of biodiversity, patterns of diversity, methods and management to maintain this diversity.
Semester(s) in which the module is taught	Third/Fifth Semester
Person responsible for the module	Ir. Ngadiman, M.Si., Ph.D.
Language	Bahasa Indonesia/Indonesian Language
Relation to curriculum	<i>Compulsory Course</i>
Teaching methods	<p>Lecture are conducted in the class with 30-40 students. In every meeting, there will be delivered interactive lecture and discussion. In some topics there will be quizzes, individual and/or group assignment.</p> <p>Details:</p> <ol style="list-style-type: none"> <li>1. Lectures</li> <li>2. Assignment (Individual and Group)</li> <li>3. Discussion</li> <li>4. Midterm</li> <li>5. Final Exam</li> </ol>
Workload (incl. contact hours, self-study hours)	<ul style="list-style-type: none"> <li>- Lectures = 2 SKS x 50 minutes x 16 meetings = 1.600 minutes = 26,67 hours = 26,67 hours/27,1 hours = 0,98 ECTS</li> <li>- Assignment = 2 SKS x 60 minutes x 16 meetings = 1.920 minutes = 32 hours = 32 hours/27,1 hours = 1,18 ECTS</li> <li>- Self Study = 2 SKS x 60 minutes x 16 meetings = 1.920 minutes = 32 hours = 32 hours/27,1 hours = 1,18 ECTS</li> </ul> <p>Total Workload = 3,34 ECTS</p>
Credit points	<i>2/0 Credit Points</i>
Required and recommended prerequisites for joining the module	<i>Biology of Microorganisms</i>

<p>Module objectives/intended learning outcomes</p>	<p><i>Program Learning Outcomes (PLO):</i></p> <p><i>PLO1: Able to explain theoretical concepts of biology microorganism and develop microbial-based technology to increase plant production and environmental services.</i></p> <p><i>PLO2: Able to describe the latest methodology in the field of microbiology to create environmentally friendly and sustainable agricultural development.</i></p> <p><i>PLO3: Able to select, utilize and manage the potential of microbes and microbiomes to build industrial and agricultural systems.</i></p> <p><i>Course Learning Outcomes (CLO):</i></p> <p><i>CLO1: Able to explain microbial biodiversity and various factors that can influence biodiversity in the environment.</i></p> <p><i>CLO2: Able to explain the relationship between ecosystems, evolution, human intervention and microbial biodiversity.</i></p> <p><i>CLO3: Able to carry out measurements and estimates as well as conservation of microbial biodiversity in nature.</i></p>
---	---

Content	<ol style="list-style-type: none"> <li>1. <i>Introduction and Components in MB: Definition and scope, prospects and challenges in MB, components of low and high levels of organisms, interactions between/in organisms/microorganisms (1 meeting)</i></li> <li>2. <i>Identification of microbial components of MB: The principles of microbial identification based on systematics, the principles of identification are based on analysis of the genetic component (1 meeting)</i></li> <li>3. <i>Microbial genetics and transformation Ecosystem link with MB: Natural ecosystems and artificial ecosystems, physical-chemical characteristics of the habitat on changes in MB (2 meetings)</i></li> <li>4. <i>Effect of changes in habitat characteristics on MB: The influence of evolutionary change and environmental revolution on MB, the influence of natural changes and natural disasters on MB (1 meeting)</i></li> <li>5. <i>Effect of changes in habitat characteristics on MB: The influence of evolutionary change and environmental revolution on MB, the influence of natural changes and natural disasters on MB (1 meeting)</i></li> <li>6. <i>Effect of changes in habitat characteristics on MB: The influence of evolutionary change and environmental revolution on MB, the influence of natural changes and natural disasters on MB (1 meeting)</i></li> <li>7. <i>Effect of changes in habitat characteristics on MB: The influence of evolutionary change and environmental revolution on MB, the influence of natural changes and natural disasters on MB (1 meeting)</i></li> <li>8. <i>Effect of changes in habitat characteristics on MB: The influence of evolutionary change and environmental revolution on MB. the influence of natural changes and natural disasters on MB (1 meeting)</i></li> <li>9. <i>Effect of changes in habitat characteristics on MB: The influence of evolutionary change and environmental revolution on MB, the influence of natural changes and natural disasters on MB (1 meeting)</i></li> <li>10. <i>Effect of changes in habitat characteristics on MB: The influence of evolutionary change and environmental revolution on MB, the influence of natural changes and natural disasters on MB, Cartagena protocol (2 meeting)</i></li> <li>11. <i>Students Presentation (2 meeting)</i></li> </ol>
---------	---

Examination forms	<i>High Order Thinking Skills Examination</i>			
	<b>Grade and Score</b>			
	<b>Grade</b>	<b>Score</b>	<b>Grade</b>	<b>Score</b>
	A	≥ 85	C+	64,0-66,9
	A-	82,0-84,9	C	61,0-63,9
	A/B	79,0-81,9	C-	58,0-60,9
	B+	76,0-78,9	C/D	55,0-57,9
	B	73,0-75,9	D+	52,0-54,9
	B-	70,0-72,9	D	49,0-51,9
	B/C	67,0-69,9	E	<49
Study and examination requirements	<i>To be able to take the final exams, the minimum of student attendance is 70% out of effective meetings. From 14 meetings, students must take a minimum of 10 meetings to take the exam.</i>			
Reading list	<i>None</i>			