



**THE MODULE HANDBOOK**  
**FACULTY OF BIOLOGY**  
**MASTER PROGRAMME**

**MICROBIAL PHYSIOLOGY**

<b>Module code</b>	BIO-60504
<b>Module level</b>	1 <sup>st</sup> year of Master Program in Biology
<b>Abbreviation, if applicable</b>	-
<b>Courses related</b>	-
<b>Semester</b>	Odd
<b>Course coordinator(s)</b>	Dr. Endah Retnaningrum, M.Eng.
<b>Lecture(s)</b>	1. Dr. Endah Retnaningrum, M.Eng. 2. Dr. Miftahul Ilmi, M.Si.
<b>Language</b>	Bahasa Indonesia and English
<b>Classification within the Curriculum</b>	Compulsory Courses for Specific Field of Interest
<b>Teaching format/class hours per week during the semester</b>	This course is organized into one class and planned to have 14 teaching weeks and 2 weeks of examination.
<b>Workload</b>	Estimated working hour: 7 hours/week.
<b>Credit</b>	2-0 credits
<b>Requirements</b>	-
<b>Course Learning Outcome</b>	<ol style="list-style-type: none"><li>1. Make a brief and clear description by giving examples of the scope of microbial physiology and how the role of microbial physiology is related to technological development</li><li>2. Develop the theory and practice of the function of metabolic diversity of microbes related to processes in everyday life through more critical writing or presentation of work</li><li>3. Discuss microbial ecological problems and explain the latest techniques for obtaining unculturable microbes and their applications</li></ol>
<b>Syllabus</b>	Microbial physiology is a study of microbial biology and intensive functions, including the study of science from various disciplines (biochemistry and genetics) to improve cell understanding and diversity of microbial characters. The Microbial Physiology Lecture is designed for master program students as elective courses that must be taken by post-graduate students with interest in Microbiology, or graduate students and other researchers who need them. This lecture discusses or discusses four main topics which include: 1. central metabolism and energy conservation (bioenergetic), 2. bacterial growth and development; 3. Macromolecular biogenesis and function, 4. Integration of



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	<p>metabolic processes. The lecture begins by discussing in general the metabolic functions that occur in all organisms. Then the discussion continued with metabolic diversity and "exclusion rules" in the diversity of the microbial world. Students will learn about current events related to microbial physiology and modern techniques for studying metabolism. Students will also learn about the great potential of microbial metabolism that is useful to overcome problems faced by society. Lecture is delivered with active learning techniques, namely by making questions to be discussed in groups or class discussions through presentations, helping to improve student retention by providing assessment of student learning, and helping to enable scientific misunderstandings. The purpose of this lecture is to combine the theories that have been obtained in previous programs with an understanding of various aspects of modern microbial physiology through molecular approaches to microbial physiology</p>
<b>Study/exam achievements</b>	<ol style="list-style-type: none"><li>Midterm: 25%</li><li>Final examination: 50%</li><li>Class Activity: 30%</li><li>Homework: 15%</li></ol>
<b>Forms of media</b>	White board, notebook, LCD
<b>Reference</b>	<ol style="list-style-type: none"><li>Madigan MT, Martinko JM, and Parker J. (2011) Brock Biology of Microorganisms, 13th ed.</li><li>Moat AG, Foster JW, and Spector MP. (2008). Microbial Physiology. Fourth ed.</li><li>White D. (2012). The Physiology and Biochemistry of Prokaryotes, , 4th ed., 2012. Oxford University Press (ISBN:978-0-19-539304-0).</li></ol>