

## 10. Module X: General Microbiology

### 10.1. Module Objectives

On completion of this module, the students will:

- Describe basic knowledge of microbiology including evolution, cell structure & function, metabolic pathway, information flow & genetics, microbial system and impact of microorganism
- Work skillfully with microorganisms and observe the different types of microorganisms based on their morphological structure
- Describe the importance and role of microorganisms in human life

### 10.2. Module Data

Person in charge	Dr. I Nyoman P. Aryantha
Total Credits	5
Course	BM2102 Project in Microbiology BM2101 General Microbiology
Modul Examination	Written Test

#### 10.2.1. Sub-module I: General Microbiology

Lecturer	Dr. I Nyoman P. Aryantha
Semester	3
Type of submodule / course	Lecture with exercises
Credits	3
Workload:	3 hours lectures, 3 hours structured activities, 3 hours individual study, 16 weeks per semester, and total 144 hours a semester
Workload details	Textbook reading assignment, paper review, group discussion and presentation
Classification within the curriculum:	<del>General Studies</del> / Compulsory Course/ <del>Elective Course</del>
Type of assessment/examination	Written Test : Midterm exam, Final exam, Quizess, Assignments Presentation
Language	Bahasa Indonesia
Course Target / Outcome	The students will have the ability to : <ul style="list-style-type: none"><li>• Define the basic biology of microorganism</li><li>• Describe the role of microorganisms and their application</li></ul>

Teaching methods	Interactive Teaching
Contents (SAP)	
	1 Introduction : History of Microbiology
	2 Basic Usage of Microscope
	3 Characteristics of Microorganisms
	4 Concept of Microbial Metabolism
	5 Nutrition and Cultivation of Microorganisms
	6 Genetics of Microorganisms
	7 Mid-Term Test
	8 Taxonomy of Microorganisms
	9 Virus
	10 Eukaryotic and Pathogenic Microorganisms
	11 Control of Microorganisms
	12 Antimicrobial Therapy
	13 Medical Microbiology
	14 Environmental Microbiology
	15 Industrial Microbiology
	16 Final Test
Literature / Sources	1. Black, J. 2007. Microbiology: Principles and Applications, 7 <sup>th</sup> ed. John Wiley.
	2. Madigan, M. T., J. M. Martinko & J. Parker, 2006. Brock Biology of Microorganisms, 11 <sup>th</sup> ed. Pearson Prentice Hall International, Inc., New Jersey
	3. Pelczar, M. J. E. C. S. Chan & N. R. Krieg, 1993, Microbiology concept and application, McGraw Hill, Inc., Toronto

### 10.2.2. Sub-module II: Project in Microbiology

Lecturer	Dr. Isty Adithya Purwasena
Semester	3
Type of submodule / course	Laboratory work
Credits	2
Workload:	6 hours laboratory, 2 hours structured activities, 2 hours individual study, 16 weeks per semester, and total 160 hours a semester

Workload details	Laboratory work, textbook reading assignment, laboratory journal preparation, group discussion and presentation.
Classification within the curriculum:	General Studies / Compulsory Course/ Elective Course
Type of assessment/examination	Written Test : Midterm exam, Final exam, Assignments Presentation Lab skill test: hands on
Language	Bahasa Indonesia
Course Target / Outcome	On the completion of this course, students are expected to obtain the ability to handle microorganisms skillfully
Teaching methods	Interactive Laboratory Practices
Contents (SAP)	
	1 Introduction to Laboratory Practice Regulation and Safety
	2 Usage of Microscope and Introduction to Microbial Forms
	3 Staining
	4 Cultivation of Microorganisms
	5 Growth of Microorganisms
	6 Activity of Microbial Biochemistry
	7 Identification
	8 Mid-Term Test
	9 Effects of Physical and Chemical Agents
	10 Small Research
	11 Soil and Air Microbiology
	12 Water Microbiology
	13 Industrial Microbiology
	14 Mini Project Result Presentation I
	15 Mini Project Result Presentation I
	16 Final test
Literature / Sources	<ul style="list-style-type: none"> <li>• 1. Cappucino, C.E., Sherman. 2005. Microbiology: A Laboratory Manual. Benjamin Cummings. Publ. Inc. Co. USA</li> <li>• 2. Pollack, R.A., Findlay, L., Mondschein, W., Modesto, R.R. 2005. Laboratory Exercise in Microbiology, 2<sup>nd</sup> ed. John Wiley and Sons, USA</li> </ul>
Other specialties	