

MODULE HANDBOOK

Module Name	Microbiology
Module level	Bachelor
Abbreviation, if applicable	3074112072
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	6 th /Third Year
Module coordinator(s)	Prof. Dr. Rudiana Agustini, M.Pd Dr.
Lecturer(s)	Nuniek Herdyastuti, M.Si; Dr. Prima Retno Wikandari, M.Si
Language	Indonesian
Classification within the curriculum	Elective Course
Teaching format/class hours per week during the semester:	2 hours lecturers (50 min per hours)
Workload:	2 x 50 minutes lectures, 2 x 60 minutes structured activity, 2 x 60 minutes individual activity, 14 weeks per semester, 79,33 total hours per semester ~ 3.18 ECTS**
Credit points:	2 CU x 1.59 = 3.18 ECTS
Prerequisites course(s):	Structure and Function Biomolecule (Biochemistry I) and Metabolism and Pathways of Genetics Information (Biochemistry II)
Targeted learning outcomes:	<p>CLO1 Mastering the concept of structure, function, distribution pattern and role of micro-organisms as well as examples related to the environment, health, foodstuffs, industry, agriculture, and chemistry</p> <p>CLO2 Able to make the right decisions in the context of solving problems related to the presence of microorganisms</p> <p>CLO3 Able to solve science, technology and art problems in the field of chemistry in general and in a simple scope and have the skills to isolate and identify enzymes, proteins and DNA from various sources as well as the application of relevant technologies</p> <p>CLO4 Mastering techniques or methods of making media for microbial growth, isolation, purification of bacteria and identification of microbes (colony form, cell shape, gram staining, response to oxygen) from various sources, and the application of relevant technologies</p>
Content:	<ul style="list-style-type: none"> • The history of the development of microbiology, the scope and current direction of development. • Structure and function: bacteria, fungi, algae, protozoa and viruses • Types of media and methods of making media for microbial growth • Isolation of microbes from various sources (water, soil and air)

	<ul style="list-style-type: none"> • Bacterial purification and identification (colony shape, cell shape, gram stain, response to oxygen) • Microbial genetics • The concept of metabolism • Microbial control • Environmental and health microbiology • Industrial microbiology • Food microbiology • Mining and petroleum microbiology
Study / exam achievements:	2 x 50 minutes lectures, 2 x 60 minutes structured activity, 2 x 60 minutes individual activity, 14 weeks per semester, 79,33 total hours per semester ~ 3.18 ECTS**
Media:	Computer, LCD, White board
Learning Methods	Individuals assignment, group assignment, discussion, presentation
Literature:	<ol style="list-style-type: none"> 1. Pelczar, Michael, 1986. Dasar-dasar Mikrobiologi (terjemahan) Jilid 1 dan 2, Jakarta: UI-Press 2. Brock, D. Thomas, 1994. Biology of Microorganism, seventh ed. London: Prentice-Hall International Inc. 3. Hadioetomo Ratna Siri, 1990. Mikrobiologi Dasar dalam Praktek, Teknik dan Prosedur Dasar Laboratorium. Jakarta: Gramedia
Notes:	*1 CU in learning process = three periods consist of: (a) scheduled instruction in a classroom or laboratory (50 minutes); (b) structured activity (60 minutes); and (c) individual activity (60 minutes) according to the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 44 Year 2015 jo. The Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 50 Year 2018.
	**1 CU = 1,59 ECTS according to Rector Decree Of Universitas Negeri Surabaya No. 598/Un38/Hk/Ak/2019