

## Module Handbook

Module Name:	Applied Microbiology
Module Level:	Bachelor
Abbreviation, if applicable:	BIN301
Sub-heading, if applicable:	-
Courses included in the module, if applicable:	-
Semester/term:	Even
Module coordinator(s):	Drs. Agus Supriyanto, M.Kes.
Lecturer(s):	Drs. Agus Supriyanto, M.Kes.; Tri Nurhariyati, S.Si., M.Kes.; Dr. Fatimah, M.Kes
Language:	Indonesian language
Classification within the curriculum	<del>Compulsory Course</del> / Elective Studies
Teaching format / class hours per week during semester:	300 minutes/ week
Workload:	100 min lecture + 100 min structural assignment + 100 min self-assignment x 13 weeks; total 3900 min = 65 hours $65/25 = 2.6$ ECTS
Credit point	2
Requirements	General Microbiology
Learning goals/competencies	<p><b>General Competence (Knowledge)</b> Students are able to conclude the benefits of microbe in field of food industry, mining, oil industry, biodegradation and biodeterioration, bioconversion, and biomonitoring process.</p> <p><b>Specific Competence</b></p> <ol style="list-style-type: none"> <li>1. Students are able to describe the process of microbial fermentation</li> <li>2. Students are able to describe the storage techniques development of microbes</li> <li>3. Students are able to describe the biomass concept and the fermentation of microbial probiotic</li> <li>4. Students are able to describe the process of microbial food fermentation</li> <li>5. Students are able to describe the process of microbial enzyme fermentation</li> <li>6. Students are able to describe the process of organic solvent by microbial fermentation</li> <li>7. Students are able to describe the process of amino acid by microbial fermentation</li> <li>8. Students are able to describe the process of organic acid by microbial fermentation</li> </ol>

	<p>9. Students are able to describe the process of antibiotic by microbial fermentation</p> <p>10. Students are able to describe the process of vitamin by microbial fermentation</p> <p>11. Students are able to describe the process of vitamin by microbial fermentation</p> <p>12. Students are able to describe the process of biopolymers by microbial fermentation</p> <p>13. Students are able to describe the process of biotransformation microbes</p> <p>14. Students are able to describe the process of bioleaching microbes</p> <p>15. Students are able to describe the process of formation of biogas from the microbial activity</p>
Content	Introduction of applied microbiology, storage techniques and the development of microbial biomass and probiotics, food fermentation, fermentation enzymes, fermentation of organic solvents, amino acid fermentation, organic acid fermentation, fermentation of antibiotics, vitamins fermentation, fermentation biopolymers.
Soft skill Attribute	Dicipline and argumentation
Study/ exam achievements	<p>Students are considered to be competent and pass if at least get 40% of maximum.</p> <p>Final score (NA) is calculated as follow: 20% (structural assignment + soft skill) + 40% mid exam + 40% final exam</p> <p>Final index is defined as follow:</p> <p>A : 75 - 100</p> <p>AB : 70 - 74.99</p> <p>B : 65 - 69.99</p> <p>BC : 60 - 64.99</p> <p>C : 55 - 59.99</p> <p>D : 40 - 54.99</p> <p>E : 0 - 39.99</p>
Form of media	LCD, computer
Learning Method	Class, and discussion
Literature	<p>a. Lynch, J.M. 1984. <i>Microbial Methods for Environmental Biotechnology</i>. Academic Press. Inc. London.</p> <p>b. Crueger, W. dan Crueger, A. 1984. <i>Biotechnology : a Text Book of Industrial Microbiology</i>. Sinauer Associates, Inc. Sunderland.</p>
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