



UNIVERSITAS NEGERI YOGYAKARTA

FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF BIOLOGY EDUCATION

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Bachelor Science in Biology

MODULE HANDBOOK

Module name:	Industrial Microbiology
Module level, if applicable:	Undergraduate
Code:	BIM6193
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	5 th
Module coordinator:	Anna Rakhmawati, M.Sc.
Lecturer(s):	Anna Rakhmawati, M.Sc., Nur Aeni Ariyanti, Ph.D
Language:	Bahasa Indonesia
Semester	Odd
Classification within the curriculum:	Elective Course
Teaching format / class hours per week during the semester:	50 minutes lectures, 60 minutes structured activities, and 60 minutes individual study per week
Workload:	Total workload is 45 hours per semester which consists of 50 minutes lectures, 60 minutes structured activities, and 60 minutes individual study per week for 8 weeks.
Credit points:	1 SKS (1 ECTS)
Prerequisites course(s):	Biochemistry, Microbiology, and Mycology
Course Outcomes	After taking this course, the students have ability to: CO1. Identify the concept of industrial microbiology CO2. Explain the history and development of industrial microbiology CO3. Describe the functions of microorganisms related to industrial process especially in fermentation
Content:	This course discusses the concept of industrial microbiology, the history and development of industrial microbiology, and

	the functions of microorganisms related to industrial process especially in fermentation.																				
Study / exam achievements:	<p>The final mark will be weight as follow:</p> <table border="1"> <thead> <tr> <th>No</th> <th>CO</th> <th>Assessment Object</th> <th>Assessment Technique</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CO1 to CO3</td> <td>Observed attitudes , knolwedge, and skills</td> <td>Survey, test, rubrics and manuals</td> <td>60%</td> </tr> <tr> <td>2</td> <td>Finall test</td> <td></td> <td></td> <td>40%</td> </tr> <tr> <td colspan="4" style="text-align: right;">Total</td> <td>100%</td> </tr> </tbody> </table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO1 to CO3	Observed attitudes , knolwedge, and skills	Survey, test, rubrics and manuals	60%	2	Finall test			40%	Total				100%
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2	Finall test			40%																	
Total				100%																	
Forms of media:	Multimedia and model																				
Reference:	<p>A. Okafor, N. 2007. <i>Modern Industrial Microbiology and Biotechnology</i>. USA: Science Publisher.</p> <p>B. Tortora, G.J., Funke, B.R. and Case, C. L. 2007. <i>Microbiology an introduction</i>, 9th ed. USA: Benjamin Cummings.</p> <p>C. Waites, M.J., Morgan, N. L., Rockey, J.S., and Higton, G. 2001. <i>Industrial Microbiology: an introduction</i>, UK: Blackwell Science.</p> <p>D. Madigan, M.T., Martinko, J.M. and Parker, J. 1997. <i>Brock Biology of Microorganisms</i>, 8th ed. USA: Prentice Hall International Inc.</p> <p>E. Ratledge, C., and Kristiansen, B. 2001. <i>Basic Biotechnology</i>. USA: Cambridge University Press.</p> <p>F. Stanbury P. F., Whitaker, A., and Hall, S. J. 1995. <i>Principles of fermentation technology</i>. USA: Elsevier Science ltd.</p>																				

PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
CO1				✓		✓					✓
CO2				✓		✓					✓
CO3				✓		✓			✓		✓