

## Module XXII: Biosafety

### 1.1. Module Objectives

On completion of this module, the students will be able to

- Summarize the knowledge about work safety in microbiology laboratory (especially) and general biosafety application in life science based industry
- Classify the general danger causes and its precaution
- Identify and classify the levels in security and safety while works in microbiology laboratory
- Predict the danger that will be caused of biology materials in laboratory
- Predict the danger that will be caused of chemical substances in laboratory
- Describe and list the strategies to manage danger potensial with various safety aequipments
- Apply safety induction to use genetic modified materials
- Define and describe about the understanding of dual use in life science and precautions methods to handle it
- Take apart in biological safety and create safety environments in laboratory
- Choose suitable laboratory design based on its levels and function
- Define the management in safety application

### 1.2. Module Data

Person in charge	Ir. V Sri Harjati Suhardi, Ph.D.
Credits	2
Course	BM4001 Biosafety
Module examination	Written test

#### 1.2.1. Sub-module I: Biosafety

Lecturer	Ir. V Sri Harjati Suhardi, Ph.D.
Semester	8
Type of submodule / course	Compulsory
Credits	2
Workload - class lecture (hr/sem)	2 hours lectures, 2 hours structured activities, 2 hours individual study, 16 weeks per semester, and total 96 hours a semester
Workload details	Textbook reading assignment, group discussion, paper review, presentation
Classification within the curriculum:	General Studies / Compulsory Course/ Elective Course
Type of examination	Written
Language	Bahasa Indonesia
Course Target / Outcome	<ul style="list-style-type: none"><li>• Students gain knowledge about microbiology laboratories safety programs particularly and biosafety generally for applied.</li></ul>

	<p>A. <u>Conceptual Knowledge and Competence:</u></p> <ul style="list-style-type: none"> <li>- Understand the impact of microorganisms on health and environmental quality</li> </ul> <p>B. <u>Scientific Skills:</u></p> <ul style="list-style-type: none"> <li>- Understand the scientific thinking process and able to carry out risk assessments based on microorganism hazards using quantitative and qualitative approaches</li> <li>- Apply the principles of work safety using microorganisms, including the use of protective equipment and applying the appropriate K3 procedures.</li> <li>- Understand the impact of accidental exposure while using microorganisms in society</li> </ul> <p>C. <u>Social Skills:</u></p> <ul style="list-style-type: none"> <li>- Draw up safety communication documents for all stakeholders</li> <li>- Understand the importance of Final examination of basic and application of safety for professionals competence.</li> </ul>
Teaching methods	Interactive Teaching
Contents (SAP)	
	1 Introduction
	2 General Safety
	3 Biosafety lab
	4 Microbiological Safety
	5 Biosafety lab
	6 Safety Equipment
	7 Mid-Term Test
	8 Safety in Biotechnology
	9 Dual Use In science
	10 Accident
	11 Lab Waste Management
	12 Behaviour based safety
	13 Laboratory Design
	14 Biological Safety Management (BSM)
	15 Industrial visit
	16 Final Test
Literature / Sources	<ul style="list-style-type: none"> <li>• Biosafety in Microbiological and Biomedical Laboratories (BMBL) 5th edition, L. Casey Chosewood, Deborah E. Wilson, US Government Printing Office, 2007</li> </ul>

	<ul style="list-style-type: none"><li>• Laboratorium Safety: Principle and practices. Fleming et al. ASM Press 1995</li><li>• Pedoman Keselamatan Kerja di Laboratorium Mikrobiologi dan Rumah sakit, Sri Harjati dkk, 2008</li><li>• Manual of Laboratorium safety, WHO, 2003</li></ul>
Other specialties	