

Module XVIII: Research Methodology

1.1. Module Objectives

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

- develop their collaboration and communication skills
- generate research ideas in the field of microbiology by incorporating several sources of information
- propose a hypothesis from the research idea
- design a research plan to test the hypothesis proposed

1.2. Module Data

Person in charge	Head of Microbiology study programme
Credits	4
Course	BI4002 Scientific Communication Technique BM3001 Research Methodology
Course Examination	Research Document Progress Report and research performance evaluation

▪ Sub-module I: Research Methodology

Lecturer	Ir. V Sri Harjati Suhardi, Ph.D.
Semester	6
Type of submodule / course	Cumpulsory Course
Credits	2
Workload – Class Lecture	2 hours lectures, 2 hours structured activities, 2 hours individual study, 16 weeks per semester, and total 96 hours a semester
Workload Detail	Paper reading assignment, presentation
Classification within the curriculum:	General Studies / Compulsory Course/ Elective Course
Type of examination	Written test
Language	Bahasa Indonesia
Course Target / Outcome	<p>A. <u>Scientific Skill</u></p> <ul style="list-style-type: none">- Possess the ability of scientific thinking skill to find research ideas- Use quantitative and qualitative approaches to develop research ideas and compile as a research proposal- Explain research results in the form of research reports that can be used by various parties- Understand the relation between science and society and understand that research is a media for collaboration <p>B. <u>Social Skill:</u></p>

	<ul style="list-style-type: none"> - Create a research that meets the principles of good science and write the results in the form of a report as a reference in the present and future. - Understand that the ability to create a research, prepare an ideal proposal and report are the ability that must be possessed by a professional.
Teaching methods	Interactive teaching
Contents (weekly)	
	1 Introduction
	2 Science and Scientific Method I
	3 Reasoning 1: Logical and creative thinking
	4 Thesis anatomy and plagiarism
	5 Research proposal: Background
	6 Research proposal: Problems identification
	7 Research proposal: mind maps and hypothesis
	8 SITH research group presentation: Current research
	9 Mid-Term Test
	10 Experiment design of single variable: Completely randomized design
	11 Experiment design of single variable: randomized block design
	12 Experiment design of single variable: latin square design
	13 Factorial experiment design
	14 Mean comparison I
	15 Mean comparison I
	16 Final Test
Literature / Sources	<p>Ranjit Kumar (2011). Research Methodology: A Step-by-Step Guide Research Methodology for Beginners By SAGE Publications Ltd, Londo, 2011</p> <p>Peter Pruzan. (2016) Research Methodology: The Aims, Practices and Ethics of Science. Springer International Publishing Switzerland.</p> <ul style="list-style-type: none"> • Alexander M. Novikov And Dmitry A. Novikov (2013). Research Methodology From Philosophy of Science to Research Design. Taylor & Francis Group, LLC
Other specialties	

1.2.1. Sub-module II: Scientific Communication Technique

Lecturer	Dr. Ahmad Faizal
Semester	6
Type of submodule / course	Cumpulsory Course

Credits	2
Workload – Class Lecture	2 hours lectures, 2 hours structured activities, 2 hours individual study, 16 weeks per semester, and total 96 hours a semester
Workload Detail	Paper reading assignment, presentation
Classification within the curriculum:	General Studies / Compulsory Course/ Elective Course
Type of examination	Written test
Language	Bahasa Indonesia
Course Target / Outcome	<ul style="list-style-type: none"> - Students will be able to composed reseach proposal and define methods in scientific thinking - Perform oral and poster scientific presentation - perform in group discussion - perform scientific and critical thinking - evaluate other scientific presentation
Teaching methods	Interactive teaching
Contents (weekly)	
	1 Scientific data visualization
	2 Quantitative communication
	3 The usage of multimedia
	4 Speaking technique
	5 Writing Technique
	6 Common problems in writing
	7 Practice of scientific writing
	8 Mid-Term Test
	9 Popular scientific writing
	10 Scientific poster
	11 Scientific presentation and oral communication
	12
	13 Material preparation parcatices: article or
	14 presentation, and oral presentation
	15
	16 Final Test
Literature / Sources	<ul style="list-style-type: none"> • Lutz and Storms, The Practice of Technical and Scientific Communication, ABLEX Publishing, 1998. • Fearing, and Sparrow, Technical Writing: Theory and Practice, Modern Language Association of America, 1989. • David Lindsay, Scientific Writing = Thinking in Words, CSIRO Publishing, 2011.
Other specialties	

