

	UNIVERSITAS PADJADJARAN FACULTY OF MATHEMATICS AND NATURAL SCIENCES BACHELOR PROGRAMME IN BIOLOGY (BPB)	COURSE CODE: D10D-5005
Module designation	Research Methodology	
Semester(s) in which the module is taught	5 th	
Lecturers	1. Prof. Dr. Wawan Hermawan, M.S. 2. Dr. Rusdi, M.Si. 3. Dr. Suryana, M.P. 4. Dr. Keukeu Kaniawati Rosada, M.Si.	
Medium of instruction	Bahasa Indonesia	
Relation to curriculum	Compulsory Course	
Teaching methods	Student-Centered Learning, Project-based Learning	
Workload	Total workload: 5440 minutes = 90.67 h Lecture, discussion, and project base learning: 2 x 50-minutes x 16 week = 1600 minutes = 26.67 h Exercises: 2 x 60-minute x 16 weeks = 1920 minutes = 32 h Independent-study: 2 x 60-minute x 16 weeks = 1920 minutes = 32 h	
Credit points	2 (2-0) 2 credits = 2 x 1.8 ECTS = 3.6 ECTS	
Required and recommended prerequisites for joining the module	-	
Module objectives/intended learning outcomes	LO1: Students are able to explain the basic principles, ethics, and plagiarism in scientific research. LO2: Students are able to conclude research problems based on quality, measurable, and valid reference sources. LO3: Students are able to formulate research hypotheses based on quality, measurable, and valid reference sources. LO4: Students are able to differentiate between types of research (qualitative, quantitative, and mixed research). LO5: Students are able to select the appropriate method to answer research problems. LO6: Students are able to design research in the form of a simple research proposal.	
Contents	1. Basic principles of scientific research, academic ethics, scientific integrity, responsibility, and plagiarism. 2. Important processes in scientific research: <ul style="list-style-type: none"> • Problem Identification and Formulation of Research Questions: Techniques for finding research gaps, defining problems, and determining focus. • Literature Review and Reference Management: Strategies for searching, critical reading, and organizing literature using reference management software. • Research Methodology Approaches: Inter-, Multi-, and Transdisciplinary: Differences, examples of applications, and their relevance in chemistry. 	

	<ul style="list-style-type: none"> • Formulation of Hypotheses and Research Objectives: Characteristics of a good hypothesis and its relationship to the theoretical framework. • Design of Scientific Research: Quantitative, qualitative, and mixed approaches in science. • Methods for Collecting and Processing Experimental Data: Experimental techniques, research instruments, and data recording. • Data Analysis and Research Troubleshooting: Strategies for analysis, interpretation of results, and handling experimental errors. <p>3. Research design in the format of a research proposal project.</p>
Examination forms	Quiz, Midterm exam, Assignment, and Final exam
Study and examination requirements	The minimum attendance in lectures is 80%. Final grades are evaluated based on quiz (10%), midterm exam (15%), assignment (10%), final exam (15%), project and participation (50%)
Reading lists	<ul style="list-style-type: none"> - Mishra, S. B. and Alok, S. (2011). Handbook of Research Methodology. A Compendium for Scholars & Researchers. New Delhi: Educreation Publishing. - Kumar, R. (2014). Research Methodology: A step-by-step guide for beginners. 4th Edition. Los Angeles: SAGE Publications Ltd. - Spellman, F. R. and Price-Bayer, J. (2011). In Defense of Science: Why Scientific Literacy Matters. Lanham: Government Institutes. - Turabian, K. L. (2020). A Manual for Writers of Research Papers, Theses, and Dissertations. 9th Edition. Chicago: The University of Chicago Press.