MODULE HANDBOOK

	UNIVERSITAS PADJADJARAN **FACULTY OF MATHEMATICS AND NATURAL SCIENCES** **BACHELOR OF BIOLOGY PROGRAMME**	**COURSE CODE:** **D10D-3002**
Module designation	Cell and Molecular Biology Practicum	
Semester in which the module is taught	3	
Persons responsible for the module	1. Annisa, M.Si., Ph.D 2. Dr. Sri Rejeki Rahayuningsih	
Medium of instruction	Indonesian	
Relation to curriculum	Compulsory course	
Teaching methods	Practice, Collaborative Learning, Contextual Learning, Problem Based Learning	
Workload	Total workload : 2720 minutes = 45.33 hours Practice : 1 x 170 minutes x 16 weeks = 2720 minutes = 45.33 hours Exercises : - Self-study : -	
Credit points	1.00 (1.81 ECTS)	
Required and recommended prerequisites for joining the module	-	
Module objectives/intended learning outcomes	1. Students are able to explain the importance of cell and molecular biology practicums. 2. Students are able to use microscopes to measure and identify various types of living cells. 3. Students are able to use and calibrate micropipettes. 4. Students are able to classify cell nucleus components and organelles using cell fractionation techniques on rat and plant livers. 5. Students are able to measure protein levels and identify carbohydrate and lipid macromolecules. 6. Students are able to demonstrate DNA isolation procedures in plants, animals, and bacteria. 7. Students are able to analyze and conclude the results of electrophoresis and PCR.	
Contents	1. Introduction 2. Microscopic measurement 3. Use of micropipettes 4. Separation of cell components using cell fractionation techniques (rat and plant livers) 5. Protein content measurement 6. Observation of carbohydrate and lipid macromolecules 7. Isolation of plant, animal, and microbial DNA 8. Electrophoresis 9. PCR	
Examination forms	Quiz, Midterm exam, Assignment, and Final exam	
Study and examination requirements	The minimum attendance in lectures is 100%. Final grades are evaluated based on quiz (10%), midterm exam (15%), assignment (10%), final exam (15%), project and participation (50%)	

Reading lists	1. Harvey Lodish; Arnold Berk; Chris A. Kaiser; Monty Krieger; Anthony Bretscher; Hidde Ploegh; Kelsey C. Martin; Michael Yaffe; Angelika Amon. 2021. Molecular Cell Biology, 9th Edition. W. H. Freeman. NY. 2. Bruce Alberts, Alexander Johnson,Julian Lewis, David Morgan, Martin Raff, Keith Roberts, Peter Walter. 2015. Molecular Biology of the Cell, 6th Edition. Garland Science. NY. 3. Jocelyn E. Krebs, Elliott S. Goldstein, Stephen T. Kilpatrick. 2018. Lewin's Gene XII. Jones & Bartlett. Massachusetts 4. Lodish, H., Berk, A., Kaiser, C. A., Krieger, M., Bretscher, A., Ploegh, H., Martin, K. C., Yaffe, M., & Amon, A. (2021). Molecular Cell Biology (9th ed.). W. H. Freeman. 5. Alberts, B., Wilson, J., & Hunt, T. (2022). Essential Cell Biology (6th ed.). W. W. Norton & Company.