MODULE HANDBOOK

	UNIVERSITAS PADJADJARAN **FACULTY OF MATHEMATICS AND NATURAL SCIENCES BACHELOR OF BIOLOGY PROGRAMME**	**COURSE CODE: D10D-60105**
Module designation	Cytogenetics	
Semester(s) in which the module is taught	6	
Person(s) responsible for the module	1. Annisa, M.Si., Ph.D 2. Dr. Sri Rejeki R.	
Medium of instruction	Indonesian	
Relation to curriculum	Elective course	
Teaching methods	Lectures, discussions, cooperative learning, and inquiry learning, project based learning	
Workload	Total workload : 5440 minutes = 90.67 hours Lectures, discussions, cooperative learning, and inquiry learning : 2 x 50 minutes x 16 weeks = 1600 minutes = 26.67 hours Exercises : 2 x 60 minutes x 16 weeks = 1920 minutes = 32 hours Self-study : 2 x 60 minutes x 16 weeks = 1920 minutes = 32 hours	
Credit points	2,00 (3,62 ECTS)	
Required and recommended prerequisites for joining the module	1. Genetics 2. Cell and molecular biology	
Module objectives/intended learning outcomes	1. Develop an understanding of cytogenetic concepts and their applications. 2. Students will be able to explain basic genetic data analysis using cytogenetic diagnostics; connect and explain basic cytogenetic considerations in breeding programs; study evolution and genetic analysis of hybrid offspring; diagnose syndromes and natural variants; and understand epigenetics and its application in biology and related fields. 3. Students will be able to provide solutions based on cytogenetic analysis for the conservation and sustainable use of biological resources as a basis for decision-making in genetic diversity management. 4. Students will be able to apply cytogenetic concepts and techniques to identify relevant chromosomal disorders in health or agriculture to improve the quality of life. 5. Students will be able to analyze chromosomal variation in organisms as a basis for the specific and sustainable management and preservation of biological resources.	
Contents	The cytogenetics course discusses the concept of cytogenetics and the application of genetics. After taking this course, students can explain what epigenetics is and its application in biology and biologically related fields. 1. Introduction and Course Contract 2. Mutations 3. Deletions and Transversions 4. Inversions 5. Bacterial Recombination 6. Extranuclear Inheritance 7. Polyploidy 8. Analytical Techniques 9. Epigenetics	

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	1. Snustad D.P and Simmons M,J.2012. Principles of Genetics, 6th Ed. John Wiley & Sons,Inc. NJ. 2. Griffiths, A.J.F., Wessler, S.R., Carool, S.B., and Doebley, J. 2015. Introduction to Genetics Analysis, 11th Ed. M.H. Freeman and company. NY. 3. Ram J. Singh. 2017. Plant cytogenetics 3rd Edition. Taylor & Francis. Illinois. 4. Shukla, R.S. & P.S. Chandel. 2001.Cytogenetics, Evolution and Plant Breeding 5. Fan, Yao-Shan. 2002.Molecular Cytogenetics: Protocols and Applications 6. Arsham, M.S., M.J. Barch and H.J. Lawce. 2017. The AGT Cytogenetics Laboratory Manual 7. Heitkam, T., & Garcia, S. (2023). Plant Cytogenetics and Cytogenomics. Humana New York. 8. Garcia, S., & Nualart, N. (2023). Plant Genomic and Cytogenetic Databases. Humana New York.