MODULE HANDBOOK

	UNIVERSITAS PADJADJARAN **FACULTY OF MATHEMATICS AND NATURAL SCIENCES** **BACHELOR OF BIOLOGY PROGRAMME**	**COURSE CODE:** **D10D-601010**
Module designation	Plant Morphogenesis	
Semester(s) in which the module is taught	6	
Person(s) responsible for the module	1. Dr. Mohamad Nurzaman, M.Si. 2. Dr. Tia Setiawati, M.Si. 3. Dr. Asep Zainal Mutaqin, M.T. 4. Dr. Rusdi, M.Si	
Medium of instruction	Indonesian	
Relation to curriculum	Elective course	
Teaching methods	Lectures, discussions, cooperative learning, Project-based Learning and inquiry 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	Plant Development Structure	
Module objectives/intended learning outcomes	1. Explain the basic concepts of cell elongation division, differentiation, and their measurement parameters 2. Explain the role of cell division, cell expansion, and cell shape changes in morphogenesis 3. Explain the structure and function of the apical meristem of the shoot and root as well as the vascular cambium 4. Relate specific gene expression to the phase of leaf and flower organ morphogenesis 5. Identify examples of polarity in root elongation zone and stem growth 6. Classify the symmetry of flower leaves and roots based on their anatomical structure 7. Identify internal genetic and external light factors that trigger differentiation and analyze the mechanisms by which pathogens manipulate host morphogenesis 8. Evaluating the role of cytokinin auxin hormones in de novo organ formation and environmental manipulation techniques for commercial plant production 9. Evaluating the impact of somatic mutations on morphological diversity and the contribution of morphogenesis research to sustainable agriculture	
Contents	In the Plant Morphogenesis course, students learn the factors that influence morphogenesis, stages of plant development, ontogeny and environmental differentiation as well as physiology, regeneration and abnormality.	
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. Sinnot, E.W, 1960, Plant Morphogenesis, McGrow-Hill Book Company, New York, Toronto, London 2. Esau, K. 1977. Anatomy of Seed Plants, 2 nd edition, John Willey & Sons Inc. New York 3. Fahn, A. 1990. Plant Anatomy, 4th edition, Bergamon Press New York. 4. B.M Johri.1984. Embryology of Angiosperm. Springer Verlag. Berlins 5. Kaplan, D. (2022). *Plant morphogenesis*. Springer 6. Crang, R., & Lyons-Sobaski, S. (2018). *Plant anatomy and morphology*. McGraw-Hill Education.	