

Bachelor of BiologyEmail: biologi_fmipa@um.ac.idWebsite: http://biologi_fmipa.um.ac.id/**MODULE HANDBOOK**

Module designation	Plant Engineering
Module level, if applicable	Undergraduate
Code, if applicable	NBIOUM6311
Subtitle, if applicable	-
Courses, if applicable	-
Semester(s) in which the module is taught	Even semester
Person responsible for the module	Rahmi Masita, S.Si., M.Sc.
Lecturer	Rahmi Masita, S.Si., M.Sc.
Language	Bahasa Indonesia
Relation to curriculum	Undergraduate degree program, elective, 6th semester.
Type of teaching, contact hours	Undergraduate degree program: cooperative learning, presentation, laboratory work, 2 x 50 = 100 minutes and 1 x 170 minutes
Workload	1. Lectures: 2 x 50 = 100 minutes (1.67 hours) per week. 2. Exercises and Assignments: 2 x 60 = 120 minutes (2 hours) per week. 3. Laboratory work: 1 x 170 minutes (2.83 hours) per week. 4. Private study: 2 x 60 = 180 minutes (2 hours) per week.
Credit points	3 credit points (~5 ECTS-eq)
Requirements according to the examination regulations	A student must have attended at least 80% of the lectures to be eligible for the final examination.
Recommended prerequisites	NBIOUM6115 Plant Physiology
Module objectives/intended learning outcomes	Students are able to: (LO4) Apply basic concepts, principles and procedures of biology to design investigations as an effort to solve problems in the health, food and environment sectors using technological applications
Course learning activity	
Content	This courses covers the following main topics: ● Introduction to agronomy and plant engineering ● Growth regulators and nutrients ● Plant radiation ● Transport of nutrients and water to plants, ● Control and application of environmental factors,

	● Plant growth form engineering, ● Engineering roots, stems and leaves ● Engineering flowers, fruits and seeds ● Nutritional and light requirements engineering ● Harvest time and crop yield engineering ● Crosses and vegetative propagation of intra-species and inter-species ● The economic value of engineered products	
Learning activity	Week 1	i did it baby
	Week 2	
	Week 3	
	Week 4	
	Week 5	
	Week 6	
	Week 7	
	Week 8	
	Week 9	
	Week 10	
	Week 11	
	Week 12	
	Week 13	
	Week 14	
	Week 15	
	Week 16	
Study and examination requirements and forms of examination	Assignment, quiz, midterm examination, final examination, performance	
Media employed	LCD, power point, white board, video and moodle (Sipejar)	
Reading list	1. Harborne, J.B. <i>Metode Fitokimia</i>. 1987. Penerbit ITB Bandung. 2. Heldt, H.W & Piechulla, B. 2011. <i>Plant Biochemistry</i> ^{4th}ed. New York : Elsevier AP. 3. Lea, P.J. & R.G. Leegood, 1999. <i>Plant Biochemistry & Molecular Biology</i>. New York: John Wiley & Sons 4. Sopyan, I.2001. <i>Analisis Kimia Kuantitatif</i> ^{3rd}Ed (terjemahan). Jakarta: Penerbit Erlangga. 5. Nambiar,E.K.S & Brown, A.G.1997. <i>Management of Soil Nutrients and Water in Tropical Plantation Forest</i>.ACIAR Australia. 6. White,R.E. 2000. <i>Principles and Practise of Soil Science</i>. Blackwell Science KK. Japan	
Date of last amendment made	January, 2022	