Subject Module
Department of Agrotechnology
Faculty of Agriculture
University of Islam Malang

Module Handbook

Module Title	Plant Propagation
Module Level, if available	Undergraduate Study Program of Agrotechnology
Course Code	MKB 40522
Headings, if available	-
Course (MK)	Plant Propagation
Semester	3
Course Coordinator	Dr. Ir.Mahayu Woro Lestari, MP.
Teaching Team	-
Language of instruction	Indonesian language/English
Linkages with the Curriculum	Study Program : Agrotechnology Specialization: Agrotechnology Type: Compulsory/~~elective~~
Learning Methods andDuration	1. Lecture: 100 minutes/meeting (14 meetings) 2. Research Based Learning through Practice in greenhouse experiment : 170 minutes/meeting (8 meetings) 3. Structured Assignments/individual and group Assigments presentation
Student Study Load	1. Lecture: 100 minutes/meeting (14 meetings) 2. Practice: 170 minutes/meeting (8 meetings) 3. Structured Assignments/quiz/group presentation 4. Attendance: 75% of total attendance
Credit Weight	3 credits or 5.1 ECTS
Requirements for Passing theCourse	• Attendance >75% • The final score of all the components of the learning evaluation >44 The final score component: • 20% Midterm Exam • 20% Final Exam • 30% Practice • 20% Structured Assignments (individual and group) • 10% Presence
Prerequisite Courses	Agronomy Basic
Learning Outcomes	The expected learning outcomes are: 1. Have good and deep knowledge in the field of basic agricultural science that supports Agrotechnology (ILO 3) 2. Able to design enterprise opportunities in the field of plant production. (ILO 10) 3. Able to manage plant production system (ILO 9) 4. Able to solve problems that arise in the field of agrotechnology and related fields of science (ILO 5)

Learning Content	After completing this course students are able to: 1. Study plant propagation techniques and their application in a sustainable crop production system 2. Doing various kinds of plant propagation 3. Assess the success rate of various plant propagation with applicable standard methods 4. Make creative and innovative varieties of plants for independent businesses as well as for the industrial sector in the agricultural and plantation sectors 5. Calculate seed requirements for plant production system The topics include: **1. Introduction** • Definition of plant propagation • The importance of plant propagation in crop production system • The scope of plant propagation • Plant propagation principles **2. Plant specific parts for plant propagation** • Various kinds of plant organs that can be used as plant material • Ways to do plant propagation • Factors affecting plant propagation **3. Cuttings** • Different types of cuttings • Classification of cuttings • Factors affecting the success of cuttings • Methods of cutting **4. Layering** • Plants required to be layering • Layering method • Layering process • Plants separating resulting from layering **5. Air Layering** • Plants required to be air layering • Air Layering method • Air Layering process • Plants separating resulting from air layering **6. Grafting** • Definition of grafting • Requirements for scion and rootstock • Grafting models • Grafting to repair damaged crops **7. Budding** • Definition of bundding • Requirements for scion and rootstock • Budding models • Budding to make plant variation **8. Plant propagation by seed** • Propagation using seeds

	• The advantages and disadvantages of i-plant propagation by seed • The reason plants do plant propagation by seed **9. Pollination** • Definition of pollination • The pollination process • The factors that determine the success of pollination **10. Fertilization** • Definition of Fertilization • The fertilization process • The factors that determine the success of fertilization **11. Reduction division in flowers** • Reduction division in male flowers • Reduction division in female flowers • The process of forming seeds **12. Germination** • Seed development • Stages of the germination process of dicot and monocot seeds • Factors causing germination failure **13. Nursery** • The purpose of the nursery • Temporary nursery • Semi-permanent nurseries • Rxcess of temporary nurseries **14. Importance of nurseries** • Seed production process • Nursery facilities • Nursery media • Calculate seed requirements
Test Terms and Forms	Examination requirements: A minimum of 75 % attendance to attend the final exam Forms of examination: Essay
Learning Media	Projector and screen, Zoom application, Google Classroom, e-book, WA Group, Practical guide book, soil and plant samples for research-based learning
References	**Main References :** 1. Membuat Setek, Cangkok dan Okulasi oleh Rini Wudianto (2019). 2. The Step by Step Guide to Plant Propagation oleh Phillip Mc. Millan (2006). 3. Introduction of Plant Propagation oleh Glenn T. Sako (2004) 4. Vegetative Propagation Techniques oleh Jalalabad (2007). 5. Plant Propagation: Principles and Practices, by Hartmann & Kester's (2017) **Supporting References :** 1. https://www.youtube.com/watch?v=wqSRq-bjM_s 2. https://www.youtube.com/watch?v=hbxC6L2Gg7k&t=7s 3. https://www.youtube.com/watch?v=zCyT3mv5Wvs

	4. https://www.youtube.com/watch?v=iuneXGyG2uU&t=307s 5. Preece, J.E., 2003. A century of progress with vegetative plant propagation. *HortScience*, *38*(5), pp.1015-1025. 6. Beyl, C.A. and Trigiano, R.N. eds., 2016. *Plant propagation concepts and laboratory exercises*. CRC press.