



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

Module Handbook

Module Title	Biopharmaceutical Plant Cultivation Technology
Module Level, if available	Undergraduate Study Program of Agrotechnology
Subject Code	MKP60603
Headings, if available	-
Subject	Biopharmaceutical Plant Cultivation Technology
Semester	2
Subject Coordinator	Dr. Ir. Mahayu Woro Lestari, MP.
Teaching Team	Dr. Ir. Sunawan, MP.
Language of instruction	Indonesian language
Linkages with the Curriculum	Study Program : Agrotechnology Specialization: Agrotechnology Type: Compulsory /elective
Learning Methods and Duration	1. Lecture: 100 minutes/meeting (14 meetings) 2. Structured Assignments/individual and group Assignments presentation
Student Study Load	1. Lecture: 100 minutes/meeting (14 meetings) 2. Structured Assignments/quiz/group presentation 3. Attendance: 75% of total attendance
Credit Weight	2 credits/ 2.36 ects
Requirements for Passing the subject	<ul style="list-style-type: none"> • Attendance >75% • The final score of all the components of the learning evaluation >44 The final score component: <ul style="list-style-type: none"> • 30% Midterm Exam • 30% Final Exam • 30% Structured Assignments (individual and group) • 10% Presence
Prerequisite Subject	Agronomy Basic
Learning Outcomes	The expected learning outcomes are: <ol style="list-style-type: none"> 1. Have good and in-depth knowledge in basic agricultural disciplines that support the field of Agrotechnology (ILO 3) 2. Able to solve problems that arise in the field of agrotechnology and related fields of science (ILO 5) 3. Able to manage plant production system (ILO 9)
Learning Content	After completing this subject students are able to: <ol style="list-style-type: none"> 1. Able to study biopharmaceutical plant cultivation techniques and their application in sustainable plant production systems 2. Capable of cultivating various biopharmaceutical plants

3. Able to assess the success rate of biopharmaceutical plant cultivation by using the method applicable standards

The topics include:

1. Introduction

- Definition of biopharmaceutical plants
- The importance of biopharmaceutical plants
- Some terms of medicinal plants

2. Parts of plants that can be used as medicine

- Stem
- Leaf
- Roots
- Rizhome
- Flower

3. Cultivation techniques

- Nursery
- Soil Cultivation
- Planting
- Fertilizer

4. Harvest

- Criteria ready to harvest
- Harvest methods

5. Post Harvest

- Purpose of postharvest management
- Factors affecting physical/chemical changes
- Processing stage

6. Post harvest processing

- Roots
- Leaf
- Rizhome
- Flower

7. Post harvest processing

- Stem
- Seed
- Wood
- Herba

8. Cultivation of plants harvested by the roots

- Ginseng (*Panax quinquefolius*)
- Vetiver (*Chrysopogon zizanioides*)
- Cogon grass (*Imperata cylindrica*)

9. Cultivation of plants harvested by the rizhomes

- Ginger (*Zingiber officinale*)
- Temulawak (*Curcuma zanthorriza*)

	<ul style="list-style-type: none"> • Tumeric (<i>Curcuma longa</i>) <p>10. Cultivation of plants harvested by the leaf</p> <ul style="list-style-type: none"> • Pegagan (<i>Centella asiatica</i>) • Celery (<i>Apium graveolens</i>) • Betel (<i>Piper betle</i>) <p>12. Cultivation of plants harvested by the stems</p> <ul style="list-style-type: none"> • Kayu putih (<i>Melaleuca leucadendra</i>) • Brotowali (<i>Tinospora cordifolia</i>) • Pulosari (<i>Alyxia Reinwardtii Bl.</i>) <p>13. Cultivation of plants harvested by the flowers</p> <ul style="list-style-type: none"> • Rosa • Clove (<i>Syzygium aromaticum</i>) • Rosella (<i>Hibiscus sabdariffa</i>) <p>14. Cultivation of plants harvested by the seeds</p> <ul style="list-style-type: none"> • Pala (<i>Myristica fragrans</i>) • Pinang (<i>Areca cathecu</i>) • Sesame (<i>Sesamum indicum</i>)
Test Terms and Forms	<p>Examination requirements: A minimum of 75 % attendance to attend the final exam</p> <p>Forms of examination: Essay</p> <p>Assignment</p>
Learning Media	<p>Zoom application, Google Classroom, e-book, WA Group, Practical guide book</p>
References	<p>Main References :</p> <ol style="list-style-type: none"> 1. Handbook of medicinal herbs, second dition by James A. Duke with Mary Jo Bogenschutz-Godwin Judi duCellier Peggy-Ann K. Duke, 2017 2. Pengelolaan Pasca Panen Tanaman Obat by Katno, 2015 3. E-book Tumbuhan Obat dalam Al Qur'an by M. Iqtedar Husain Farrooqi, 2021 <p>Supporting References :</p> <ol style="list-style-type: none"> 1. Indian Medicinal Plants by C.P. Khare, 2018 2. Buku panduan praktikum matakuliah Produksi tanaman obat & aromatik by Nur Azizzah, 2018 3. E-book Aneka tanaman obat herbal alami by Prasko, 2020