



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

Module Title	Biology
Module Level, if available	Undergraduate Study Program of Agribusiness
Course Code	MKD 60701
Headings, if available	-
Course (MK)	Biology
Semester	1
Course Coordinator	Dr. Ir. Anis Rosyidah, MP.
Teaching Team	-
Language of instruction	Indonesian language/English
Linkages with the Curriculum	Study Program : Specialization: Agribusiness Agribusiness Type: Compulsory/elective
Learning Methods and Duration	<ol style="list-style-type: none"> 1. Lecture: 100 minutes/meeting (14 meetings) 2. Practicum 170 minutes/meeting (8 meetings) 3. Structured Assignments/individual and group Assignments presentation
Student Study Load	<ol style="list-style-type: none"> 1. Lecture: 100 minutes/meeting (14 meetings) 2. Practicum: 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 the Course	<ul style="list-style-type: none"> • Attendance >75% • The final score of all the components of the learning evaluation >44 <p>The final score component:</p> <ul style="list-style-type: none"> • 20% Midterm Exam • 20% Final Exam • 30% Practicum • 20% Structured Assignments (individual and group) • 10% Presence
Prerequisite Courses	-

<p>Learning Outcomes</p>	<p>The expected learning outcomes are:</p> <ol style="list-style-type: none"> 1. Able to understand the rules and principles of agribusiness sciences, social sciences, economics, and agricultural techniques as the basic for innovative agribusiness disciplines (ILO 2).
<p>Learning Content</p>	<p>After completing this course students are able to:</p> <ol style="list-style-type: none"> 1. Understand the general structure of the higher plant body and its organizational levels starting from cells, tissues, organs, organisms, populations, communities, ecosystems, and the biosphere. 2. Explain the morphological structure of roots, stems, leaves, flowers, fruits, and seeds and understand the function of each of these organs. 3. Identify plants according to plant taxonomy and can make its classification in 6 main taxon: division-class- order-family-genus-species. 4. Analyze plant growth problems related to the anatomical structure, morphology, and taxonomy of plants. 5. Provide solutions to plant growth problems related to the anatomical structure, morphology, and taxonomy of plants. <p>The topics include:</p> <ol style="list-style-type: none"> 1. Introduction <ul style="list-style-type: none"> ▪ Scope and concept of agricultural biology ▪ Principles for level of organization of living things 2. Structure and Function of Plant Cells <ul style="list-style-type: none"> ▪ Cell Wall ▪ Protoplasm ▪ Vacuoles and Ergastic Substances 3. Structure and Organizing Tissues of Roots, Leaves, and Stems <ul style="list-style-type: none"> ▪ Leaf tissue structure, Isolateral, and Dorsiventral Leaves ▪ Tissue Structure of Monocotyledoneae and Dicotyledoneae Stem ▪ Differences in the Anatomical Structure of Root and Stem Tissue 4. Morphological structure of plants <ul style="list-style-type: none"> ▪ Leaf Morphology ▪ Stem Morphology ▪ Root Morphology 5. Flowers, Pollination and Fertilization <ul style="list-style-type: none"> ▪ Flowers Structure ▪ Pollination and Germination of Pollen ▪ Formation of the Nucleus in the Embryo Sac ▪ Double Fertilization and Changes in the Ovaries 6. Structure and Classification of Fruit and Seeds

	<ul style="list-style-type: none"> ▪ Fruit Classification ▪ The structure and parts of the seed <p>7. Plant Taxonomy</p> <ul style="list-style-type: none"> ▪ Definition and Principles of Plant Taxonomy ▪ Taxonomic Benefits in Plant Cultivation Techniques <p>8. Schizophyta</p> <ul style="list-style-type: none"> ▪ The characteristics of Schizophyta ▪ Classification of Schizophyta <p>9. Thallophyta</p> <ul style="list-style-type: none"> ▪ The characteristics of Thallophyta ▪ Classification of Thallophyta <p>10. Bryophyta</p> <ul style="list-style-type: none"> ▪ The Characteristics of the Moss Plant ▪ Schematic of Moss Plant Metagenesis ▪ Classification of Moss Plants <p>11. Pteridophyta</p> <ul style="list-style-type: none"> ▪ Characteristics of Pteridophyta ▪ Schematic of Homosporous, Heterospor & Transitional Metagenesis of Pteridophyta ▪ Classification of Pteridophyta <p>12. Spermatophyta</p> <ul style="list-style-type: none"> ▪ Characteristics of Seed Plants ▪ Schematic of Seed Plant Metagenesis ▪ Classification of Seed Plants: Gymnosperms and Angiosperms (Monocotyledoneae and Dicotyledoneae)
Test Terms and Forms	<p>Examination requirements: A minimum of 75 % attendance to attend the final exam</p> <p>Forms of examination: Essay</p>
Learning Media	<p>Projector and screen, Zoom application, daring.unisma.ac.id, e-book, WA Group</p>

References

Main References :

1. Mulyani, S.E.S. 2009. Anatomi Tumbuhan. Kanisius. Yogyakarta.
2. Hidayat, E. B. 1995. Anatomi Tumbuhan Berbiji. ITB. Bandung. 275 hal
3. Tjitrosoepomo, G. 2014. Taksonomi Tumbuhan Schizophyta, Thallophyta, Bryophyta dan Pteridophyta. Gadjahamada University Press. Yogyakarta.
4. Chikmawati, T., Nunik, S.A. , Nina, R.J., Sri, S.T.S. 2018. Taksonomi Tumbuhan Tinggi. Universitas Terbuka. 332 hal
5. Tjitrosoepomo, G . 2018. Morfologi Tumbuhan. Gadjahamada University Press. Yogyakarta
6. Hadisunarso dan Nina, R.J. 2018. Morfologi Tumbuhan. Universitas Terbuka. 326 hal

Supporting References :

Link <https://googlescholar.com> untuk artikel-artikel jurnal dan buku elektronik

1. Struktur sel :
<https://www.youtube.com/watch?v=V7NH57ZX4pU>
2. Anatomi jaringan batang :
<https://www.youtube.com/watch?v=j6RfG7bksMw>
3. Anatomi jaringan daun :
<https://www.youtube.com/watch?v=2OfIF1RNIeE>
4. Anatomi jaringan akar :
<https://www.youtube.com/watch?v=w5rRIky3I4Q>
5. Schizophyta :
<https://www.youtube.com/watch?v=LSDfR5lm-Zo>
6. Thallophyta :
<https://www.youtube.com/watch?v=IEbrICFp914>
7. Bryophyta :
https://www.youtube.com/watch?v=FRam_dx_50s
8. Pteridophyta :
<https://www.youtube.com/watch?v=92vzLZ-ZLY>
9. Spermatophyta :
<https://www.youtube.com/watch?v=UVBRPpZdWHs>