USK UNIVERSITAS SYIAH KUALA

FACULTY OF AGRICULTURE

DEPARTMENT OF SOIL SCIENCE

UNDERGRADUATE PROGRAM **MODULE HANDBOOK**

Module designation	Plant physiology (SSOL1015)
Semester(s) in which the module is taught	1st semester
Person responsible for the module	Dr. Ir. Mardhiah Hayati, M.S.
Language	Indonesian, English
Relation to curriculum	Compulsory module for Soil Science Department
Teaching methods	Lecture, presentation, focus group discussion
Workload (incl. contact hours, self-study hours)	✔ Lecture and discussion 100 minutes per week per semester ✔ Structured tasks 120 minutes per week per semester ✔ Personal tasks 120 minutes per week per semester
Credit points	2 SKS = 3.2 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	✔ Students are able to analyze physiological processes in plants and their application in sustainable land resource management. ✔ Students are able to identify plant physiology-related problems in land resource management and formulate research-based solutions.
Content	This course provides an explanation of the definition of plant physiology, its importance, and the benefits of studying it. It covers the role of water and nutrients in plant metabolism, photosynthesis in C3, C4, and CAM plants, and respiratory metabolism including glycolysis, the Krebs cycle, and the electron transport chain. Students also gain an understanding of the properties, structure, and mechanisms of enzyme action, as well as the effects of plant growth regulators on plant growth and development.
Exams and assessment formats	Quiz, assignment, mid-term exam, and final exam
Study and examination requirements	✔ Quiz: 10% ✔ Participatory: 15% ✔ Assignment: 20% ✔ Mid-term exam: 25% ✔ Final Exam: 30%

Reading list	1. Bhatla, S. C., & Lal, M. A. (2023). Plant physiology, development and metabolism. Springer Nature. 2. Heldt, H. W., & Piechulla, B. (2021). *Plant biochemistry*. Academic Press. 3. Taiz, L. (2025). Plant physiology and development. 4. Heldt, H. W., & Piechulla, B. (2021). *Plant biochemistry*. Academic Press. 5. Jain, V. K. (2018). *Fundamentals of plant physiology*. S. Chand Publishing. 6. Hess, D. (2012). *Plant physiology: molecular, biochemical, and physiological fundamentals of metabolism and development*. Springer Science & Business Media. 7. Mohr, H., & Schopfer, P. (Eds.). (2012). *Plant physiology*. Springer Science & Business Media.