



USK
UNIVERSITAS
SYIAH KUALA

FACULTY OF AGRICULTURE
DEPARTMENT OF SOIL SCIENCE

UNDERGRADUATE PROGRAM

MODULE HANDBOOK

Module designation	Physics (SSOL1003)
Semester(s) in which the module is taught	1 st semester
Person responsible for the module	Dr. Gunawati,S.Si.
Language	Indonesian, English
Relation to curriculum	Compulsory module for Soil Science Department
Teaching methods	Lecture, interactive discussion, focus group discussion
Workload (incl. contact hours, self-study hours)	<ul style="list-style-type: none">✓ 100 minutes lecture and discussion per week✓ 120 minutes structured tasks per week✓ 120 minutes learn to be independent per week
Credit points	2 SKS = 3.2 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<ul style="list-style-type: none">✓ Students are able to explain the basic concepts of physical quantities and units, kinematics, dynamics, work and energy, fluid mechanics, vibrations, and wave motion.✓ Students are able to describe the fundamental principles of temperature and heat, the laws of thermodynamics, electrostatics, electric currents, magnetic fields and forces, as well as modern physics concepts.✓ Students are able to apply physical principles to analyze and understand physical phenomena in agricultural contexts.
Content	The Agricultural Physics course introduces students to fundamental physical concepts and laws that govern natural phenomena, with particular emphasis on their application in agriculture. The topics covered include fluid mechanics, wave motion, thermodynamics, electromagnetism, and modern physics, providing students with a foundational understanding of physics relevant to agricultural systems and processes.
Exams and assessment formats	Assignment, mid-term exam, final exam
Study and examination requirements	<ul style="list-style-type: none">✓ Assignment: 50%✓ Mid-term Exam: 25%✓ Final Exam: 25%

Reading list	<ol style="list-style-type: none">1. Halliday, D., Resnick, R., & Walker, J. (2013). Fundamentals of physics. John Wiley & Sons.2. Krane, K. S. (2019). Modern physics. John Wiley & Sons.3. Mansfield, M. M., & O'sullivan, C. (2020). Understanding physics. John Wiley & Sons.4. Borgnakke, C. (2025). Fundamentals of thermodynamics. John Wiley & Sons.5. Young, H. D. (2004). Sears dan zemonsky fisika universitas. Erlangga.6. Young, H. D., & Freedman, R. A. (2003). Fisika Universitas edisi kesepuluh jilid 2.7. Arfken, G. (2012). University physics. Academic Press.8. Reichl, L. E. (2016). A modern course in statistical physics. John Wiley & Sons.9. Thorne, K. S., & Blandford, R. D. (2017). Modern classical physics: optics, fluids, plasmas, elasticity, relativity, and statistical physics. Princeton University Press.
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