

Module Handbook

Module Name:	Elementary Physics 2A
Module Level:	Bachelor
Abbreviation, if applicable:	FI 1201
Sub-heading, if applicable:	
Courses included in the module, if applicable:	
Semester/term:	first year
Module coordinator(s):	
Lecturer(s):	
Language:	Bahasa Indonesia
Classification within the curriculum:	General Studies / Major Subject / Elective Studies
Teaching format / class hours per week during the semester:	4 hours lectures, 2 hours tutorial
Workload:	4 hours lectures, 3 hours tutorial and structured activities, 3 hours individual study, 2 hours laboratory work per week, 16 weeks per semester, and total 192 hours a semester
Credit Points:	4
Requirements:	-
Learning goals/competencies:	<p>Knowledge</p> <ul style="list-style-type: none"> - To understand the basic concepts and principles in electromagnetism and modern physics. <p>Skills</p> <ul style="list-style-type: none"> - To demonstrate an ability to conduct experiments in measuring the magnitude of magnetic fields inside a solenoid - To demonstrate an ability to conduct experiments in measuring effective current and potential of an alternating current (AC) - Able to use ampere meter and voltmeter on a direct current (DC) source and able to analyze the Wheatstone bridge. - To demonstrate an ability to conduct experiments in a interference and diffractions <p>Competence</p> <ul style="list-style-type: none"> - to compute the Coulomb force and electric field generated by discrete and continuous charges, including the application of Gauss's law. - to compute potential energy and electric potential due to discrete and continuous charges and apply it on capacitors - to compute the magnetic field generated by a current-carrying wire (Biot-Savart law and Ampere law) - to apply the Faraday and Lenz's law of magnetic induction to generate electromotive Force (EMF) - to solve direct current (DC) and alternating current (AC) problems - To explain the quantities of electromagnetic waves, wave energy, wave power and wave intensity - To solve problems on interference pattern of N-slit and the diffraction pattern for width-slit and N-slit (interferention-diffraction) - To solve problems on Einstein's special relativity and wave- particle dualism

	<ul style="list-style-type: none"> - Able to analyze an experiment of modern Physics (photoelectric effect) - Able to design a simple device that uses the concepts of elementary Physics IIA (RBL)
Content:	Electrostatic (electric field, Coulomb Law), Electric Potential Energy, Electrical Potential, Capacitor. Magnetism, Electromotive force, Alternating Current, Electromagnetic Wave, Modern Physics, Atomic Physics
Study/exam achievements:	Students are considered to be competent and pass if at least get 50% of maximum mark of the exams, homework, laboratory work, and research based learning.
Forms of Media:	Slides and LCD projectors, blackboards, lab.
Literature:	<ol style="list-style-type: none"> 1. Halliday, D., Resnick, R., and Walker, J., Principle of Physics, 9th ed. Extended, John Wiley & Sons, 2011 2. Serway, R.A., <i>Physics for Scientists and Engineers</i>. Sander College, 1996 3. Alonso, M. & Finn, E.J. <i>Physics</i>. Addison Wesley, 1992
Notes	The course is more calculus based as compared to FI1202 Elementary Physics 2B