

Module Handbook

Module Name:	Elementary Physics 1A
Module Level:	Bachelor
Abbreviation, if applicable:	FI 1101
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 concept of vectors and basic concepts and principles in mechanics, fluid, elasticity and oscilation, and thermodynamics. <p>Skills</p> <ul style="list-style-type: none"> - To demonstrate an ability to plan and prepare practical laboratory investigations on Newton mechanics. - To demonstrate an ability to conduct experiments and record data using a variety of suitable instruments for Newton mechanics experiments - To demonstrate an ability to conduct experiment in a responsible and compliance way to the relevant health and safety regulations <p>Competence</p> <ul style="list-style-type: none"> - To have an ability to apply the concept of vectors and Newton's laws for a single particle and for a system of particles in 1, 2, and 3 dimensions. - To understand and able to apply the concept of work-energy for solving simple problems in mechanics. - To have an ability to formulate, solve and analyse problems of statics and dynamics of rigid body systems. - To understand and able to solve problems in statics and dynamics of fluids. - To understand, to have an ability to solve and analyze problems in thermodynamics. - To demonstrate an ability to analyze and interpret experimental data on Newtonian mechanical experiments using knowledge of mathematics and physics - Able to design a simple device that uses the concepts of elementary Physics IA (RBL)
Content:	Kinematics of Point Objects, Relative Motion, Dynamics of Point object (Newton's laws of the force concept, work and energy, impulse and momentum,

	conservation laws), Dynamics System of point Objects (center of mass), Rotational motion (angular momentum, rigid body rotation with a fixed axis), Elasticity and Oscillations, Wave Mechanics, Statics and Fluid Dynamics, Thermophysics (kinetic theory of gases, Heat and work, The first law of thermodynamics , efficiency, Carnot cycle)
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 FI1102 Elementary Physics 1B