Module Handbook

Module Name:	Mechanics
Module Level:	Bachelor
Abbreviation, if applicable:	FI2102
Sub-heading, if applicable:	
Courses included in the module, if applicable:	
Semester/term:	Second 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, 2 hours tutorial, 2 hours structured activities, 4 hours individual study, 16 weeks per semester, and total 192 hours a semester
Credit Points:	4 c.u
Requirements:	1. FI1101 Elementary Physics IA 2. FI1201 Elementary Physics IIA 3. MA1101 Mathematics IA 4. MA1201 Mathematics IIA
Learning outcomes	**Knowledge:** 1. Ability to demonstrate knowledge of Newtonian mechanics of a single particle and system of particles 2. Ability to identify, formulate Newtonian mechanics in non-inertial frame 3. Ability to formulate Lagrange's and Hamiltonian equations to simple physical systems **Skill:** 1. Ability to solve a standard problem in Newtonian mechanics such as in particle dynamics, oscilating system. 2. Ability to analyze motion of particle in Newtonian mechanics, such as: central force and coupled system. 3. Ability to solve problems on Newtonian mechanics in non-inertial frame 4. Ability to apply and solve problem of Lagrange's and Hamiltonian equations to simple physical systems 5. Ability to solve dynamical problems involving particles and system of particles by using the Lagrangian and Hamiltonian formulation.
Content:	Kinematics of Particle; Dynamics of Particle: Newton's Laws, work-energy theorem, conservative and non-conservative forces, functional forces; Central Force: characteristics force, Kepler's laws, planetary orbits; Dynamics of System of Particles: center of mass, collision, scattering; Non-inertial Reference System: translating coordinate system, rotating coordinate system; Lagrangian and Hamiltonian Dynamics: Lagrange's equation, Hamilton's equation
Study/exam achievements:	Students are considered to be competent and pass if at least get 50% of maximum mark of the Mid-term Test, Final Examination, Quizzes, Home Work.
Forms of Media:	Slides and LCD projectors, blackboards
Literature:	1. Arya, A. P., An Introduction to Classical Mechanics, Prentice Hall, 1990. 2. Symon, K. R., Mechanics, Addison Wesley, 1980. 3. Fowles, G. R., Cassiday, G.L., Analytical Mechanics, Harcourt College

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