Syllabus

Course Title: Physics I
Course Code: 01-09
Product Code: A1

First Creation (Date - Version No.) : 080111-01

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Revision History (Date - Version No.)			
1	080119-02	16	
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Final Version (Date - Version No.) :

Official Approval	Date of Report to PIU

Course Title, Class	Term	Day of the week, Period	Credit	Instructor
Physics I	1st		4	Assoc. Prof. Dr. Do Ngoc Uan

Course Description
It's the first part of General Physics for Undergraduates training on Industrial, Technological Branches. In Physics I students study the motion of matter: i) Mechanical motion in which the main topics are: Vectors, Kinematics, Forces, Motion, Momentum, Energy, Angular Motion, Angular Momentum, Gravity, Planetary Motion, Moving Frames, and the Motion of Rigid Bodies. The motion of a simple body (ideal particle) and systems of bodies are considered. ii) Specifically motion as mechanical vibration and waves with main topics: Oscillators, Energy, Sound, Ultrasound, Poynting Vector, Doppler effect and application. iii) The Thermal motion is investigated by statistical and thermodynamic methods. The main topics are thermodynamic systems, Kinetic Gas Theory, Distribution Function, Thermodynamic laws of ideal gas, Carnot cycle, Thermal Engine, Real gas, Phase Transitions and application.

Focus and Goal
For Students to receive Bachelor of Ritsumeikan University(Japan) and HUT Diploma.

Courses which students are recommended to enroll in, but not required to
Mathematics, Philosophy

Schedule	
1st	**Theme I:** Introduction, Subject of Physics.
	Keywords: Matter, motion, Physics, Atom, Electron, MicroPhysics, Maccrophysics, Observation, Experiment, Physical laws, Theory, Application, Problem to solve, Energy, Environment.
2nd	**Theme II:** Physical Quantities, System Units, and Measure error.
	Keywords: Physical quantity, Scalar, Vector, Coordinates, Product, Calculation, Operator, differential, Units, SI, Measurement, Direct, Indirect, Error, relative, Absolute, Around.
3rd	**Theme III:** Kinematics of body motion
	Keywords: Body, ideal particle, system, coordinates, inertia, Frames, Motion equation, Free motion, angular motion, orbit, velocity, acceleration, normal, tangent, Vectors.
4th	**Theme IV:** Dynamic of body motion
	Keywords: Newton's laws, Acceleration, Mass, Forces, Friction, Resistance, Moment, Momentum, Relative, Moving Frames, Galileo, Inertia force, Reaction.
5th	**Theme V:** Dynamic of System of bodies
	Keywords: Center of mass, momentum, Impulse, conservation, Rocket, rigid, gyres, inertia moment, force moment, Angular moment, Rotation, Rotator.
6th	**Theme VI:** Energy
	Keywords: Work, Power, kinetic, rotation, Collision, Isolated, conservative force, potential, mechanical, Conservation of energy
7th	**Theme VII:** Gravity
	Keywords: Conservative force, Potential, mechanical, Conservation of energy, Newton's law, Fall acceleration, Earth, Solar Mass, Motion around and from the Earth, Cosmic Velocities.
8th	**Theme VIII:** Einstein's Theory of Relativity.
	Keywords: Einstein, Postulates, Lorenz, Light velocity, Energy, masses, time, Length, Kinematics, and Dynamics.
9th	**Theme IX:** Mechanical Vibration
	Keywords: Harmonic, frequency, Amplitude, energy, Free, Damped, Forced, Resonance.
	Theme X: Mechanical Waves

	Keywords: Transversal, longitudinal, spherical, Planar Function, Energy, Umop-Pointing, Interference, Huygen, Diffraction, sound, ultrasound, Doppler.
11th	**Theme XI:** Kinetic theory of gas
	Keywords: Temperature, Kelvin, Pressure, Atmosphere, Ideal gas, Boyle-Mariotte, Gay-Lussac, Thermodynamic equation of state, Clapayron, Degree of Freedom, Internal Energy, Velocity, Distribution, Boltzmann, Maxwell.
12th	**Theme XII:** The first law of Thermodynamics
	Keywords: Work, Heat, first law, Conservation of Energy, Thompson, Clausius, Equilibrium, Isothermal, Isobaric, Isometric, Adiabatic, and Heat capacity.
13th	**Theme XIII:** The second law of Thermodynamics
	Keywords: Reversible Process, Heat Engine, Efficiency, Second law, refrigerators, Carnot Cycle, Entropy, Thermodynamic Function, Clausius.
14th	**Theme XIV:** Real Gas and Phase Transformation
	Keywords: Internal Pressure, Incompressible Volume, Van-der-Waals, Andrew, Joule-Thompson, Phase, and Clapayron-Clausius.

Out of class assignment
Students: Correction, recalculation of own notes with text books and solving home Problems Tutorials and assistance: Office hours.

Grading Criteria and Method of Evaluation		
Kind	Percentage	Evaluation Criteria
Examination	70%	Scalar 0-10.
Report	30%	Scalar 0-10.
Continuous Assessment		Failed: <4; Weak Passed: 4 to <5; Normal: 5 to <6, Relative Good: 6 to <7; Good: 7 to <8; Very good : 8 to <9; Excellent: 9 to10;
Others		
Note		

Educational advice for enrolled students
Students to receive JTC or HUT Diploma to have 8 Credits for Physics I and Physics II.

Textbooks				
Title	Author	Publisher	ISBN code	Comment
Training Books on general Physics: 3 Toms Theory and Problems.	Luong Duyen Binh and other	Education Hanoi 1978-2005		In Vietnamese Main Educational materials
General Physics: Principles and Application.	Tran Ngoc Hoi and Pham Van Thieu	Education Hanoi 2006		In Vietnamese Reference
Note				

Reference books				
Title	Author	Publisher	ISBN code	Comment
Physics For Scientists and Engineers	P. M. Fishbane and other	Prentice Hall		Reference
Physics Classical and modern	Frederick J. Keller, W. Edward	McGraw-Hill, Inc.		Reference

	Gettys Malcolm J. Skove			
Note				

Internet Websites related to the Course
Construction later in HUT Websites. http://ocw.mit.edu/OcwWeb/Physics/; http://Virclass.com; http://nsdl.exploratorium.edu/

Contact
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Others