01	**Course Information**			
		i	Course Title	: **Physics**
		ii	Course No	: **PHY 1101**
		iii	Credits	: 3.0
		iv	Year/ Semester	: 1st /1st
		v	Total Marks	: 100
		vi	Course Type	: Theory
		vii	Time (duration)	: 13 weeks (13 hours per credit: 3 x 13 = 39 classes per semester)
		viii	Location	: EEE Class Room, JUST Campus
02	**Instructor Information**			
		i	Instructor Name	: TBA
		ii	Office	: Dept. of Physics, JUST
		iii	Office Hours	: 9:00 to 5:00
		iv	Mobile	: TBA
		v	Email	: TBA
03	**Prerequisite Course**			**:** Not applicable
04	***Topic Outline***			

	a) Abridged content	**b) Lecture schedule/Content outline**
Week-1	Waves and Oscillations, Differential equation of a simple harmonic oscillator, total energy and average energy, combination of simple harmonic oscillations.	**Teaching, Learning, and Scholarship (TLS):** Brainstorming, Background of learner, Lecture with presentation, Demonstration, Interactive discussion, Small/Group discussion. **Assessment:** Question/Answer, MCQ,
Week-2	Microphone, condenser microphone, moving coil electrodynamics microphones, loudspeaker. Architectural acoustics; reverberation time, Sabine's formulae, theoretical treatment of reverberation time, live room, dead room.	
Week-3	Physical Optics, Theories of light; Interference of light, analytical; treatment of interference, theory of interference fringes.	
Week-4	Young's double slit experiment; Diffraction of light: Fresnel and Fraunhoffer diffraction, diffraction by single slit, diffraction from a circular aperture; Polarization.	
Week-5	Analysis of polarized light, Brewster's law, Malus law, Polarization by double refraction, Nicol prism, optical activity, polarimeters, Polaroid.	
Week-6	Heat and Thermodynamics, System, Processes, State, Thermodynamic Properties, Zeroth Law of thermodynamics and its application.	

Week-7	First Law of thermodynamics and its application, reversible and irreversible processes, Second Law of thermodynamics, Third Law of thermodynamics.	Class test, Quiz, Short question, Project report, Essay type written test, Viva-voce.
Week-8	Carnot cycle, Carnot's theorem; Efficiency of heat engines, entropy and disorder, thermodynamic functions, Maxwell relations, Clausius-Clapeyron Equation.	
Week-9	Galilean relativity and Einstein's special theory of relativity; Lorentz transformation equations, Length contraction, Time dilation and mass-energy relation, photoelectric effect.	
Week-10	Compton effect; De Broglie matter waves and its success in explaining Bohrs theory, Pauli's exclusion principle, Constituent of atomic nucleus, Nuclear binding energy,	
Week-11	Different types of radioactivity, radioactive decay law; Nuclear reactions, nuclear fission, nuclear fusion, atomic power plant.	
Week-12	Keplers law of planetary motion, The law of universal Gravitation, the motion of planets and satellites.	
Week-13	Introductory quantum mechanics; Wave function; Uncertainty principle, postulates, Schrodinger time independent equation, expectation value, Probability, Particle in a zero potential, calculation of energy.	
05	**Texts, Materials and Book Recommended:**	
	1 Fundamentals of Physics by David Halliday, Robert Resnick, Jearl Walker	
	2 Physics, Volume 1 by David Halliday, Robert Resnick, Kenneth S. Krane	
	3 Concepts of Modern Physics by Beiser, Arthur	
	4 Physics for Engineers by Giasuddin Ahmed	
	5 Fundamentals of Optics by Francis A. Jenkins & Harvey E. White	
	6 Heat and Thermodynamics by Brij Lal, N. Subrahmanyam	
06	**Assignments and exams**	: Quizzes and exams (Class test & Final exam)
07	**Field Trip**	: Not Applicable