D.B.F. Dayanand College of Arts and Science, Solapur

COURSE OUTCOME

Name of Department: **Physics**

B.A. / B.Sc. / M.A. / M.Sc.: **B.Sc.**
NAME OF SUBJECT: **Physics**
SEM   I / II / III / IV / V / VI: **Sem-V**
COURSE NUMBER (PAPER NUMBER) : **XI**
TITLE OF COURSE (NAME OF PAPER): **Classical Mechanics**

COURSE CONTENT	OBJECTIVES	OUTCOME
Mechanics of a particle and system of particles 1.1 Mechanics of a particle using vector algebra and vector calculus 1.2 Conservation theorems for linear momentum, angular momentum and energy of a particle 1.3 Mechanics of a system of particles, concept of centre of mass 1.4 Conservation theorems for linear momentum, angular momentum and energy of a system of particles 1.5 Application of Newton's law of motion - Projectile motion in resistive medium 1.6 Problems	To understand Mechanics of a particle and system of particles, Conservation laws and applications.	The students understand Mechanics of a particle and system of particles, Conservation laws and applications.
Lagrangian Formulation 2.1 Limitations of Newtonian Formulation 2.2 Introduction of Lagrangian Formulation 2.3 Constraints 2.4 Degrees of freedom 2.5 Generalised coordinates 2.6 Principle of virtual work 2.7 D'Alembert's Principle 2.8 Lagrange's equation from D'Alembert's Principle	To get knowledge of Constraints, Degrees of freedom, Generalised coordinates, Principle of virtual work, D'Alembert's Principle and Lagrangian Formulation and Applications of Lagrange's equation.	The students get knowledge of Constraints, Degrees of freedom, Generalised coordinates, Principle of virtual work, D'Alembert's Principle and Lagrangian Formulation and Applications of Lagrange's equation.

2.9 Application of Lagrange's equation to i) A particle in space (Cartesian coordinates) ii) Atwood's Machine and iii) A bead sliding on uniformly rotating wire iv) Simple Pendulum v) Simple harmonic Oscillator 2.10 Problems		
Moving Coordinate systems 3.1 Moving origin of coordinates 3.2 Pseudo forces 3.3 Rotating coordinate systems 3.4 Coriolis force 3.5 Foucault's pendulum 3.6 Effects of Coriolis force in nature 3.7 Effect of Coriolis force on freely falling body 3.8 Promlems	To get knowledge of Moving Coordinate systems, Coriolis force, Foucault's pendulum, Effects of Coriolis force in nature and freely falling body	The students get knowledge of Moving Coordinate systems, Coriolis force, Foucault's pendulum, Effects of Coriolis force in nature and freely falling body
Techniques of Calculus of Variation 4.1 Hamilton's principle 4.2 Deduction of Lagrange's equations from Hamilton's principle 4.3 Applications: i) Shortest distance between two points in a plane ii) Brachistochrone problem iii) Minimum surface of revolution	To get knowledge of Hamilton's principle, its derivation from Lagrange's equations and applications of Hamilton's principle.	The students get knowledge of Hamilton's principle, its derivation from Lagrange's equations and applications of Hamilton's principle.
Coupled Oscillations 5.1 Frequencies of coupled oscillatory system 5.2 Normal modes and normal coordinates 5.3 Energy of coupled oscillations 5.4 Energy transfer in coupled oscillatory system 5.5 Problems	To get knowledge of coupled oscillatory system, Normal modes and normal coordinates, energy and energy transfer coupled oscillatory system	The students get knowledge of coupled oscillatory system, Normal modes and normal coordinates, energy and energy transfer coupled oscillatory system
Motion of rigid body 6.1 Motion of rigid body in space 6.2 Euler's theorem 6.3 Angular momentum and energy 6.4 Euler's equations of motion	To get knowledge of Motion of rigid body in space, Euler's theorem, Angular momentum and energy, Euler's equations of motion	The students get knowledge of Motion of rigid body in space, Euler's theorem, Ang. Mom.and energy, Euler's equations of motion

Signature of HOD