

OUTLINE FOR CLASSICAL MECHANICS F4052

Jan -May 2019

Professor Ronald Selsby M F 8:30 – 10.00 Am

TEXT : Classical Mechanics by John R. Taylor

ISBN-13:978-1-891389 ISBN-10: 1-891389-22-X

1. GENERALIZED COORDINATES & MOMENTS – HAMILTON'S EQUATIONS

2. THE COUPLED HARMONIC OSCILLATOR

Solution using second order equations.

3. HAMILTON'S'S 1st Order Eqs. & the Coupled Harmonic Oscillator
function of a matrix; Eigenvalues and Eigenvectors

Superposition and Completeness; Solution of Hamilton's Equations; Normal Coordinates; Numerical examples

MIDTERM EXAM

4 MECHANICS IN NON INERTIAL REFERENCE FRAMES

1. Planar Motion

2. The Angular Velocity Vector

3. Derivative of a vector in the rotating Frame.

4. General Motion of the Coordinate System.

Centripetal, Coriolis and Transverse Forces

5. Examples: plumb line; surface projectile; Foucault Pendulum

EXAM II

5. SCATTERING & COLLISION THEORY

VI. SPECIAL RELATIVITY

EXAM III Final Exam