

MT510: MECHANICS-II

Syllabus: Motion of a top; Equation of motion of a top; Steady motion of a top; Stability conditions; Hamilton's principle, Principle of least action; Kinematics of ideal fluid, Lagrange's and Euler's methods, Streamlines, Path lines, Stream function in two dimensions; Velocity potential; Rotational and Irrotational motion in two dimensions; Equation of Continuity; Lagrange's approach; Eulerian approach, Equivalence of these two approaches; Equation of Continuity: Cartesian, Cylindrical and Spherical polar coordinates; Boundary surfaces; Euler's hydrodynamical equations, Bernoulli's theorem, Helmholtz equations; Cauchy's integrals, Motion due to impulsive forces, Motion in two dimensions: Complex potential; Cauchy-Riemann equations; Two dimensional Sources; Sinks; Doublets and their images

UNIT SCHEDULE

- Unit 8** Motion of a top
- Unit 9** Hamilton's principle and Principle of least action
- Unit 10** Kinematics
- Unit 11** Equation of Continuity-I
- Unit 12** Equation of Continuity-II
- Unit 13** Equation of Motion-I
- Unit 14** Equation of Motion-II
- Unit 15** Motion in Two Dimensions