JTL 217 Classical Mechanics

Instructor: Srikanth Sastry

Lagrangian formulation of mechanics. Generalised coordinates. Constraints. Hamilton's principle of least action. Lagrange's equations. Conservation laws. Hamiltonian formulation of Mechanics. Hamiltonian. Hamilton's equations. Canonical transformations. Liouville's theorem. Hamilton-Jacobi theory. Scattering. Small Oscillations. Rigid body motion. Nonlinear dynamics. Continuum mechanics. Fields. Fluid dynamics. Elasticity.

Reference Books:

1. Mechanics by L. D. Landau and E. M. Lifshitz

2. Classical Dynamics: A Contemporary Approach by J. V. José, E. J. Saletan

3. Classical Mechanics by H. Goldstein, C. Poole and J. Safko

ASSESSMENTS AND GRADING

- There will be 2 assignments, each of which contain 3 – 5 problems and will carry 15 marks out of 100 for the final evaluation.
- A midterm examination (most likely an open book examination) will carry 30 out of 100 marks.
- A final examination (most likely an open book examination) will carry 40 out of 100 marks.