# DEPARTMENT OF MATHEMATICS,

# UNIVERSITY OF KARACHI,

## Course Outline

**MATH 652: CLASSICAL MECHANICS - II**

Course contents:

Hamilton's equations. Least action principle. Hamilton's equations. Contact transformations. Symplectic structure on the phase space. Hamilton Jacobi equations. Small oscillations. Generalization to continuous systems and fields.

**Books Recommended:**


1. Sheck, F., Mechanics, Springer Verlay, Berlin, 1988.
2. Goldstein, H., Classical mechanics, Addision Wesley, 1962.
3. Meirovitch, L., Methods of Analytical Dynamics, McGraw Hill,1970.
4. Marion, J. B., Classical Dynamics of Particles and Systems, Second Edition, Academic Press, 1970.
5. Corben, H. C. and Stehle, P., Classical Dynamics, Second Edition, John Wiley, 1960.
6. Rund, H., The Hamilton Jacobi Theory in the Calculus of Variations, D. Van Nostrand, 1966.
7. Caratheodory, C., Calculus of Variations and Partial Differential/Equations of First Order, Part I, Holden Day, 1965.
8. Taylor, E. F. and Wheller, J. A., Spacetime Physics, W.H. Freeman, 1966.
9. Meirovitch L., Methods of Analytical Dynamics, First edition, McGraw Hill, New York, 2007