APPLIED MATHEMATICS 509
"ANALYTICAL DYNAMICS"

Calendar Description: H(3-0)
   Symplectic geometry, Hamilton's equation, Hamilton-Jacobi theory, constraints and reduction.

Prerequisite: Applied Mathematics 505 and consent of the Division.

Syllabus

Topics	Number of Hours
Calculus on manifolds: Lie derivative and group actions, Differential forms, Integration of forms and Stokes' theorem	5
Analytical Dynamics: Symplectic geometry, Hamiltonian formalism, Poisson brackets, Lagrangian systems, calculus of variations.	14
Hamilton-Jacobi theory, period-energy relation.	3
Action-angle variables: local theory and global aspects (monodromy calculations)	6
Introduction to symmetry and reduction: momentum mapping, symplectic reduction of symmetries (regular case).	8
TOTAL HOURS	36

****

2001:08:22
LJB:jml