

APPLIED MATHEMATICS 605 "DIFFERENTIAL EQUATIONS III"

Calendar Description: H(3-0)

Linear systems, classification, genericity and structural stability. Nonlinear systems: Existence and uniqueness. Rectification Theorem. Flow and one parameter group of transformation. Stability theory. Hyperbolicity. Unstable/Stable/Center manifold theorems. Poincare-Bendixon. Two dimensional flows.

Prerequisite: Applied Mathematics 411 and Pure Mathematics 445 or 545 or equivalent.

Syllabus

<u>Topics</u>	<u>Time</u>
Linear Systems	7
Local Existence and Uniqueness theorems for Systems. Parameter Dependence	9
Flows, Stability theory, hyperbolicity, unstable/stable/counter manifold theorems	10
Hamiltonian systems	2
Global theory: periodic orbits, limit cycles, attractors	6
Poincare map, Poincare-Bendixson theorem	2
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