

DEPARTMENT OF MATHEMATICS
SYLLABUS

Course # & Name: 119B: Ordinary Differential Equations

Recommended Text(s) & Price: S. H. Strogatz, "Nonlinear Dynamics and Chaos, 1st Edition" (\$49.00)

Prepared by: A. Schwarz UPC Approval Date: Jan. 2003

Lecture(s)	Sections	Comments/Topics
	Lorentz equations	Phase space analysis; general properties; bifurcation; Lorenz map
	1-d maps	Phase space analysis: iterative diagram, fixed points & stability; unimodal maps: numerics & analysis; period-doubling bifurcation; Lyapunov exponent; Sarkovskii theorem: period three implies chaos; chaos & symbolic dynamics
	Fractals	Cantor set, Sierpinski triangle and Koch snowflake; contraction mapping theorem; iterative function systems; algorithms of generating fractals; fractal dimension