MATH 553 (Advanced Dynamical Systems)

Course Outline
Session 2016W Term 2 (Jan–Apr 2017)

Prerequisite: MATH 552 (or equivalent)

Web page: http://www.math.ubc.ca/~nagata/m553/

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Recommended textbook (optional, not required):


Topics:

- Topics in Global Dynamics: The Smale horseshoe map, symbolic dynamics, chaos, bifurcations of orbits homoclinic to hyperbolic equilibria (chaos in Lorenz equations, Shil’nikov bifurcations).

- Two-Parameter Bifurcations of Equilibria: Codimension two bifurcations, cusp bifurcation, generalized Hopf (Bautin) bifurcation, Bogdanov-Takens bifurcation, fold-Hopf bifurcation.

- Homoclinic Bifurcations in n Dimensions: Homoclinic orbits in \( \mathbb{R}^n \), projections, exponential dichotomies, homoclinic centre manifolds.