Dynamical Systems 1MA217.

Course Webpage:
http://www.math.uu.se/~gaidash/1MA217/1MA217.html

Lecturer:
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Objectives of the course:

1) Understand the fundamental concepts of the dynamical systems, specifically:
   - dynamics of the quadratic family;
   - conjugacies, specifically as relates to circle maps;
   - topological dynamics; recurrence, mixing and transitivity;
   - symbolic dynamics, shifts;
   - hyperbolicity and structural stability;
   - stable and unstable manifolds, homoclinic and heteroclinic intersections, horseshoes;
   - fundamental concepts of Kolmogorov-Arnold-Moser theory;
   - fundamental concepts of ergodic theory;

2) Solve representative problems in the above-mentioned topics.

3) Carry out numerical studies of dynamical systems.

4) Understand and be able to explain/present some applications of the theory.

Textbooks:
Primary text: M. Brin, G. Stuck, *Introduction to Dynamical Systems*, Cambridge University Press 2002. Available for purchase as e-book at www.cambridge.org.

Secondary text: M. W. Hirsch, S. Smale, R. L. Devaney, *Differential Equations, Dynamical Systems and an Introduction to Chaos*, Academic Press (Elsevier) 2004.

Bits and pieces from: A. Katok, B. Hasselblatt, *Introduction to the Modern Theory of Dynamical Systems*, Cambridge University Press 1995, partially freely available at Google Books, www.books.google.com.

Grading:
A takehome final, 100% of the final grade.