Ordinary Differential Equations II 1MA208.

Course Webpage:
http://www2.math.uu.se/∼gaidash/1MA208/1MA208.html

Lecturer:
Denis Gaidashev, office: Ångström 14231, gaidash@math.uu.se.

Objectives of the course:

1) Understand the matrix methods for first order linear systems. Be able to solve the relevant problems.
2) Be able to state, prove and apply existence and uniqueness theorems.
3) Understand the non-linear systems and their stability properties; limit cycles and Poincare-Bendixson Theorem.
4) Understand the basics of the Sturm-Liouville theory. Be able to apply the theory in boundary very problems.
5) Understand and be able to approach first-order systems as continuous dynamical systems. Be able to describe the details of the dynamics of the Lorenz attractor and homoclinic phenomena.

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

Could be useful (and is free): Gerald Teschl, *Ordinary Differential Equations and Dynamical Systems*, Graduate Studies in Mathematics, Volume 140, Amer. Math. Soc., Providence, (2012). Available at
http://www.mat.univie.ac.at/ gerald/ftp/book-ode/index.html

Bits and pieces from various online resources and lecture notes.

Grading:
A takehome exam, 100% of the final grade. The usual scale: $>= 80\%$ **is** 5**,** 63 **to** 80% **is a** 4**,** 45 **to** 63% **is a 3**