

## CONTENTS of the course

### *Dynamical systems and Bifurcation theory* *(First part - MAT/05)* 2008/09

Corrado Lattanzio

#### **Section 1: Richiami (Teoria Lineare)**

Classificazione degli equilibri, esponenziale di una matrice, forma canonica di Jordan in due dimensioni.

#### **Section 2: Nonlinear Theory**

Local Theory of nonlinear systems: initial value problem, hyperbolic equilibrium point, Stable Manifold Theorem. Hartman-Grobman Theorem. Stability and Liapunov functions. Saddles, nodes, foci and centers. Nonhyperbolic critical points. Center manifold theory.

Global theory of nonlinear systems: limit set, attractor, limit cycle, Poincaré map, stable manifold theorem for periodic orbits, Poincaré - Bendixson theory.