The course will be devoted to **Normal forms for dynamical systems**

Main topics:
   Phase portraits, Flows
2. Linearization. Dynamics defined by linear and linearizable vector fields.
3. Resonant normal form and normal forms by the principal part.
   Finite determinacy.
6. Families of vector fields. Hopf bifurcation
7. Elements of blowing-up technique (desingularization)
9. Limit cycles

**References:**
D. Arrowsmith, An Introduction to Dynamical Systems
V. Arnold, Geometric methods in the theory of ODE’s
V. Arnold, Yu. I’lyashenko, Ordinary Differential Equations
(Encycl. of Math. Sci., Dyn. Sys.-1)

The course will be much more accessible than any book on the topics above.

**Grade:**
Homeworks : 30 points
Activities in the class (good questions, comments, answering my questions): 20 points
Project to be made during the course: 35 points
Written test (end June): 15 points