

# Advanced Topics in Dynamical Systems

The course consists of 20 sessions. Dr. Figueras will teach the first half, while Dr. Gaidashev the second one. This course will be given in English.

## Course literature

Bonatti, C.; Diaz, L. and Viana, M. *Dynamics Beyond Uniform Hyperbolicity*.  
de la Llave, R. and Haro, A. *A tutorial on KAM theory*.  
Lyubich, M. *Six Lectures in Real and Complex Dynamics*.  
Meiss, J. *Symplectic Maps: Variational Principles and Transport*.

## Topics:

- Hamiltonian Dynamics. Symplectic maps. (4 lectures).
- KAM theorem: circle maps, symplectic maps, Hamiltonian systems. (4 lectures).
- Uniform dynamics. Aubry-Mather sets. (2 lectures).
- Benedicks-Carleson Theorem. (2 lectures).
- Complex Dynamics. The quadratic map. (8 lectures).

## Examination

There will be two homework assignments. The course is passed if the student gets good grades in both.