

Introduction to dynamical systems:

(this course is intended mostly for undergraduates with few pre requisites; some familiarity with the concept of derivative is usefull but it is not mandatory)

first lecture:

Basic concepts: orbit, periodic points, attractors, repellers.

Dynamics on the natural numbers: some examples, the Collatz conjecture.

Symbolic dynamics: the symbolic space as a metric space, the shift map.

second lecture:

Properties of the shift map: expansiveness, transitivity.

Cellular automata: some examples, Hedlund's Theorem.

Symbolic space and its connection with the binary representation of the real Numbers.

third lecture:

Dynamics on the unitary interval: tent map, relation with the shift.

Quadratic family: basic properties for certain parameters, period doubling, the transitive case (related to the tent).

(if some time remains: an example of a hyperbolic dynamical systems in the two dimensional torus)