Program	59EC – Communications Electronic Engineering B. Eng.
	59SC – Telecommunications Systems Engineering B. Eng.
	59SO – Sound and Image Engineering B.Eng.
	59TL – Telematics Engineering B. Eng.

Course number and name	
Number	595040073
Name	Dynamical Systems
Semester	S6 [(February-June)]

Credits and contact hours	
ECTS Credits	3
Contact hours	30

Coordinator's name	Hernández Heredero, Rafael José
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Specific course information

Description of course content

This course is an introduction to the theory of Differential Equations from the point of view of the Dynamical Systems. Techniques for qualitative analysis of differential equations and examples of applications to electronics and science will be exposed. Prerequisites of the course are having completed successfully Bachelor courses on Calculus of one and several variables, as well as Linear Algebra.

List of topics to be covered

1. First Order Ordinary Differential Equations
2. Flat Linear Systems
3. Linear Systems in more dimensions
4. Introduction to non-linear systems
5. Non-linear global techniques
6. Applications in Circuit Theory
7. Lorenz's System: Chaos
8. Homoclinic Phenomena. Chua's circuit.

Prerequisites or co-requisites

Linear Algebra
Calculus I

Course category in the program

__ R (required)	_X_ E (elective)
	(elective courses may not be offered every year)

Specific goals for the course

Specific outcomes of instruction
• RA1081 - Ability to apply the techniques of qualitative analysis of ordinary differential equations in solving problems in Science and Technology.

Further reading and supplementary materials
– Hirsch M., Smale S., Devaney R. Differential equations, dynamical systems and an introduction to chaos (Elsevier, 2004)

Teaching methodology			
_X_ lectures	_X_ problem solving sessions	_X_ collaborative actions	__ laboratory sessions
Other:			