Program	**09TT- Engineering in Telecommunication Technologies and Services**

Course number and name	
Number	95000021
Name	Communications Theory Teoría de la comunicación
Semester	Y2-S4

Credits and contact hours	
ECTS Credits	6
Contact hours	74

Coordinator's name	Mateo Burgos-García

Specific course information

Description of course content

This subject describes the use of time and frequency domain tools in order to transmit information through a channel, optimizing resources and performance. Both baseband and modulation systems using analog and digital techniques are covered.

List of topics to be covered

- Communication systems: structure, resources and performance
- Signals, noise and distortion analysis
- Analog communications: baseband and modulation
- Introduction to digital communications: Main blocks, analog to digital conversion
- Line coding and digital modulations
- Detection of digital signals
- Intersymbol interference
- Synchronization aspects

Prerequisites or co-requisites

- Signals and linear systems analysis
- Theory of probability and random signals
- General mathematical knowledge: differentiation, integration, complex numbers

Course category in the program

_*X*_ **R (required)**	__ **E (elective)**	__ **SE (selective elective)**

Specific goals for the course

Specific outcomes of instruction

RA1: To characterize and describe deterministic and random signals and their application to voice, data, audio and video coding, and to characterize noise and perturbations. RA2: To use different signal modulation and demodulation techniques. RA3: To use different source coding, and channel coding techniques RA4: To manipulate and filter analog and digital signals RA5: To evaluate different technological choices, and to specify and deploy communication systems and services.
Student outcomes addressed by the course
CECT1, CECT4, CECT5 CG1, CG2, CG5, CG13

Bibliography and supplemental materials
- Specific class notes prepared by the teachers team and published in the web page of the subject - Laboratory manuals prepared by the teachers team and published in the web page of the subject - S. Haykin. Communication Systems. J. Wiley - Sklar. Digital Communicatios. Prentice Hall - J. Proakis. Digital Communications. Mc Graw-Hill

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