

## Course Syllabus

### WIRELESS COMMUNICATIONS

Printed by: jfmoncay

Program: Telecommunications Engineering

#### 1. Course number and name

TELG1025 - WIRELESS COMMUNICATIONS

#### 2. Credits and contact hours

3 credits and 4 contact hours

#### 3. Instructor's course or coordinator's name

BORIS GABRIEL RAMOS SANCHEZ

#### 4. Text book, title, author, and year

- Heath, R.W.. Introduction to Wireless Digital Communication (1st Edition)
  - a. Other supplemental materials
- Pahlavan, K. y Krishnamurthy, P.. Principles of Wireless Access and Localization (1st Edition)
- Rappaport, T. S.. Wireless Communications. Principles and Practice. (2nd Edition)

#### 5. Specific course information

- a. Brief description of the content of the course (catalog description)

This course describes the evolution of mobile communication networks and the characteristics of the wireless medium. In addition, the coverage of wireless systems is evaluated using propagation models that use the characteristic distance-power gradient for different environments. Finally, the physical layer of wireless networks is studied for the design and implementation of wireless communication systems: one input and one output (SISO), multiple inputs and multiple outputs (MIMO), using one or multiple carriers.

- b. Prerequisites

PROPAGATION - TELG1015

- c. This course is: Required

#### 6. Specific goals for the course

- a. Specific outcomes of instruction

1.- Analyzing the characteristics of the wireless medium using power-distance gradient models for the design of wireless communications systems.

2.- Designing the transmission and reception interface of a SISO system using a single carrier for the implementation of the wireless communication system.

3.- Designing the transmission and reception interface of a SISO system using multiple carriers for the implementation of the wireless communication system.

4.- Designing the transmission and reception interface using diversity techniques in single-carrier systems.

- b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other



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outcomes are addressed by the course

- A recognition of the need for entrepreneurship and the abilities to become an entrepreneur
- An ability to design and conduct experiments as well as to analyze and interpret data
- An ability to use the techniques, skills and modern tools necessary for engineering practice

#### 7. Brief list of topics to be covered

- 1.- Evolution of wireless networks.
- 2.- Characteristics of the wireless medium.
- 3.- Distance-power gradient models characteristic of the channel.
- 4.- Distortions of the multipath phenomenon and Doppler effect.
- 5.- The physical layer of wireless networks.
- 6.- Diversity techniques and intelligent reception.

