Telecommunication Systems

Academic Year: (2019 / 2020) **Review date: 26-04-2019**

Department assigned to the subject: Department of Signal and Communications Theory

Coordinating teacher: MOLINA BULLA, HAROLD YESID

Type: Compulsory ECTS Credits : 6.0

Year : 4 Semester : 1

STUDENTS ARE EXPECTED TO HAVE COMPLETED

- Digital Communications: 3rd year 1st Semester
- Systems and Transmission Channels: 3rd year 1st Semester

And it is highly recommended to study simultaneously at the same semester:

- Wireless Communication Networks Planning
- Propagation waves and wireless transmission

COMPETENCES AND SKILLS THAT WILL BE ACQUIRED AND LEARNING RESULTS.

The student will acquire knowledge about the principles of contemporary telecommunication systems. With an integrating and systemic character, the student acquires the ability to analyze and design complete telecommunication systems according to the fundamental quality parameters and requirements. He/She will also be able to evaluate the pros and cons of different technological alternatives. (PO a, c, e, h, j, k)
Also, the student will be capable of communicating efficiently in written and oral form, the procedure followed to solve problems of design of mobile communication systems. (PO g)

DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction to telecommunication Systems: classification, Basic Concepts of networks, Systems and services, regulation.
2. Basic concepts of telecommunication systems: traffic; routing; basic telephone network; flow control and congestion; multiple access.
3. Fixed communication systems: access through wireline, optical fibre and wireless; SDH; (D) WDM, WiFi , femtocells, WMAN
4. Terrestrial Mobile Communications systems: classification; TETRA; GSM; GPRS-EDGE.
5. Satellite communication systems: orbital concepts; fixed services, VSAT and mobile services; navigation.
6. BigData en Comunicaciones

LEARNING ACTIVITIES AND METHODOLOGY

Two types of learning activities will be used: theory lectures and study cases.

ECTS credits include the work to be carried out by the student either personally or in groups.

THEORY LECTURES (4ECTS)
Theory lectures are taught using the blackboard or other audiovisual media in order to illustrate some concepts.
In these sessions the theoretical concepts will be illustrated with practical exercises.
In these lectures the student will acquire the basic knowledge of the course. It is important to highlight that these sessions will require the initiative and participation from the student (some concepts will have to be studied personally with some indications, particular cases will have to be developed, ¿)

(PO a, c, e, g, h, j, k)

STUDY CASES (2 ECTS)
In order for the student to acquire en integrated and systemic view of telecommunication systems, He/She will practice deeper, through personal work, in specific telecommunication systems. In these

study cases the student will have to use the knowledge acquired in previous subjects, of a more specific character, about the different techniques and technologies that are applicable to telecommunication systems.

(PO a, c, e, g, h, j, k)

ASSESSMENT SYSTEM

Assessment includes:
- Study cases. (PO a, c, e, g, h, j, k)
- Final exam. (PO a, c, e, g, h, j, k)

The final mark is obtained as a weighted sum of the marks of the final exam (60%), the problems (up to one additional point) and the study cases (40%).

% end-of-term-examination:	60
% of continuous assessment (assigments, laboratory, practicals…):	40

BASIC BIBLIOGRAPHY

- Freeman, R.L. Telecommunication System Engineering, John Wiley & Sons, 1989.