Radiation and quantum communications

Academic Year: (2019 / 2020) **Review date: 13-05-2019**

Department assigned to the subject: Signal and Communications Theory Department

Coordinating teacher: GARCIA MUÑOZ, LUIS ENRIQUE

Type: Electives ECTS Credits : 6.0

Year : 4 Semester :

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Electromagnetics Fields

OBJECTIVES

Knowing and getting the radiation fundamental concepts.
Knowing and getting the antenna basic parameters.
Using such concepts for designing and analysing wireless communication links.
Knowing the difference between guided and wireless links.
Using such concepts for designing guided and wireless links.
Knowing and getting the quantum mechanics basic concepts.
Knowing the difference between quantum and classic communication links.

DESCRIPTION OF CONTENTS: PROGRAMME

Topics
1. Introduction to electromagnetic radiation.
2. Introduction to antenna theory.
3. Free and guided classic channels. Some notes about propagation
4. Fundamentals on quantum mechanics
5. Channels and quantum communications systems.

LEARNING ACTIVITIES AND METHODOLOGY

The following activities will be combined as described in the detailed program of the course:

1- Theory lectures in the blackboard and with slides. Resolution of small exercises
2- Problems
3- Labs (two labs in computer room)
4- Office hours
5- Proposed exercises with solutions will be published in each chapter for self-studying.

ASSESSMENT SYSTEM

Global exam at the end of the semester (60% of the final grade (6 points)).
Theory exam (without books or notes): test and/or short questions together with problems.

The last 40% will be obtained by the continuous evaluation (4 points) which includes a test with short questions and/or a few small problems

A minimum of 4 points in the final exam is required to overcome the subject.

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

BASIC BIBLIOGRAPHY

- Feynman Quantum Mechanics, Caltech, 2011
- Leonard Susskind Quantum Mechanics. The Theoretical Minimum, Penguin, 2015

- Schelfunoff Antennas Thoery and practice, Wiley, 1952

ADDITIONAL BIBLIOGRAPHY

- Landau Quantum Mechanics, vol. 3, Reverte, 1981