High frequency technology

Academic Year: (2019 / 2020) **Review date: 21-05-2019**

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

Coordinating teacher: SEGOVIA VARGAS, DANIEL

Type: Electives ECTS Credits : 6.0

Year : 1 Semester :

STUDENTS ARE EXPECTED TO HAVE COMPLETED

It is expected that students have knowledge on microwave circuits and antennas

COMPETENCES AND SKILLS THAT WILL BE ACQUIRED AND LEARNING RESULTS.

CB6 achieve and understand knowledge that can be the starting point for an original research work
CB7 Students will be able to apply the achieved knowledge in the resolution of new problems in interdisciplinary and broad areas
CB9 Students will be able to transmit their conclusions and new knowledge to both specialist and non-specialist public in a clear and unambiguas way.
CB10 Students will achieve the learning abilities so that they can go on studying by themselves.
CG1 Understanding of the techniques needed for the microwave and antennas fields.
CG4 Capacity to realize critical analysis and synthesis of new ideas.
CG5 Capacity to communicate the new ideas, both in English and in Spanish, to the international scientific community.
CE1 Students will be able to realize a critical analysis of technic and scientific papers in the field of RF subsystems for communication systems.
CE2 Students will achieve an exhaustive perspective in the state of the art for RF subsystems for communication systems.
CE3 Students will be able to develope original RF subsystems for communication systems. They will be able to present their work in international conferences.
CE4 Students will be able to apply maths, statistics and scientific knowledge to RF subsystems for communication systems
CE5 Students will have the ability to design RF experiments, analyze and interpret the results.
CE6 Understand and be able to work with the fundamental concepts on RF subsystems for communication systems: active antennas, antenna arrays, broadband antennas, diplexers, filters, amplifiers, oscillators and mixers.
- Develope capacities for understanding radio systems.
- Provide the students with enough knowledge to analyze and design new RF communication systems.
- Discuss the results in international forums.

DESCRIPTION OF CONTENTS: PROGRAMME

Chapter 1: Introduction to Computational Electromagnetics.
Chapter 2: Advanced Topics on Microwave Filters.
Chapter 3: Antenna as RF subsystem: active antennas, antenna arrays, wideband antennas.
Chapter 4: Active Circuits for Microwave Applications
Chapter 5: Introduction to Terahertz Technology & Applications
Chapter 6: Measurement techniques for microwave devices and antennas.

LEARNING ACTIVITIES AND METHODOLOGY

There will be different tuition activities coordinated by the professor of the different parts of the syllabus.

ASSESSMENT SYSTEM

The evaluation will be based on continuous assesment (100%) well by partial exams well by developing works on the different chapters of the syllabus

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

BASIC BIBLIOGRAPHY

- C. A. Balanis Advanced Engineering Electromagnetics, John Wiley & Sons, Inc., 1989

- Guillermo Carpintero, Enrique Garcia-Munoz, Hans Hartnagel, Sascha Preu, Antti Raisanen Semiconductor TeraHertz Technology: Devices and Systems at Room Temperature Operation , John Wiley & Sons, 2015

- M. Salazar-Palma, T. K. Sarkar, L.E. Garcia-Castillo, T. Roy, and A.R. Djordjevic Iterative and Self-Adaptive Finite-Elements in Electromagnetic Modeling, ARTECH HOUSE, 1998

- Richard J. Cameron, Chandra M. Kudsia, Raafat R. Mansour Microwave Filters for Communications Systems, John Wiley & Sons, 2007