

Quantum sensing

Academic Year: (2023 / 2024)

Review date: 25-04-2023

Department assigned to the subject: Electronic Technology Department

Coordinating teacher: ACEDO GALLARDO, PABLO

Type: Compulsory ECTS Credits : 3.0

Year : 1 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Sensor and Classical Measurement Instrumentation Systems

OBJECTIVES

The objective of this course is to review the fundamentals of quantum sensors and to review the different sensor technologies currently available and under development.

DESCRIPTION OF CONTENTS: PROGRAMME

Introduction to quantum sensors.

Quantum sensors: definition and characteristics. Quantum sensing protocols.

Examples of quantum sensors and applications:

- Quantum clocks and applications: geodesy, navigation,
- Quantum measurements of electric and magnetic fields.
- Quantum measurements of temperature and pressure.

LEARNING ACTIVITIES AND METHODOLOGY

Learning activities:

AF1 Theoretical class

AF2 Practical classes

AF3 Theoretical and practical classes

AF4 Laboratory practices

AF5 Tutorials

AF6 Group work

AF7 Individual student work

Teaching methodologies:

MD1 Class lectures by the professor with the support of computer and audiovisual media, in which the main concepts of the subject are developed and the bibliography is provided to complement the students' learning.

MD2 Critical reading of texts recommended by the professor of the subject: articles, reports, manuals and/or academic articles, either for later discussion in class, or to expand and consolidate the knowledge of the subject.

MD3 Resolution of practical cases, problems, etc. posed by the teacher individually or in groups.

MD4 Presentation and discussion in class, under the moderation of the professor, of topics related to the content of the subject, as well as of practical cases.

MD5 Elaboration of works and reports individually or in groups.

ASSESSMENT SYSTEM

Continuous Assessment:

1.- Group Work 20%

2.- Laboratory Report 20%

Final Exam 60%

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

BASIC BIBLIOGRAPHY

- null Papers and other materials provided by the faculty, related to the different contents of the course..