

Lab project II

Academic Year: (2019 / 2020)

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Department assigned to the subject:

Coordinating teacher: RUIZ LLATA, MARTA

Type: Electives ECTS Credits : 3.0

Year : 1 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

The ones included in M1.ADVANCED PHOTONICS ENGINEERING BASICS and Experimental Projects I

OBJECTIVES

BASIC

CB7

That the students can apply their knowledge and ability to solve problems in new or unfamiliar in wider or multidisciplinary environments related to their field of study.

CB8

That the students can integrate their knowledge, as well as handle the complexity of making judgements from an incomplete or limited information, but which could include reflections about the social and ethic responsibilities that could be linked to the application of their judgements and knowledge.

CB10

That the students possess learning skills that allow them following their long-life learning in a self-conducted and self-sufficient way.

GENERAL

CG1

Ability to produce English-language documents, plans and projects in the field of Photonics Engineering.

CG2

Ability to propose, design, implement and maintain a system with photonic components for a specific application

CG4

Capacity to lead and work in a team integrating multidisciplinary approaches, managing and planning their own work.

CG6

Capacity to apply the scientific method as a fundamental work tool both in the professional and the research fields, managing the sources of information.

SPECIFIC

CE1

Identify the different blocks which are present in a system where photonics plays an essential role, the specificities of its design, possible subsystems to be used, its integration and its final verification.

CE2

Handling of tools aiming to design photonic devices and systems.

CE4

Handling of measurement instruments and photonics with the support of electronics to develop different devices and systems, with application in communications, avionics, automotive, energy sector and civil infrastructures.

CE6

Capacity of designing photonic devices, passive and active, and of evaluating its performance

CE7

Capacity of analyzing and designing photonic systems for applications in communications and sensing.

CE9

Capacity of experimentally verifying in the laboratory the achievement of the required specifications in a new photonic device or system after its implementation.

DESCRIPTION OF CONTENTS: PROGRAMME

The subjects Lab Project I and Lab Project II allow the student to develop a laboratory project from a list of proposals. Each project will comprise a complete system of moderate complexity that, starting from a list of specifications, will cover a specific photonic application. Examples could be an instrumentation system based on fiber Bragg gratings or a VLC communication system. The compulsory and elective subjects offered during the first semester will be taken into account to conform the list of projects, in order to cover several application areas related to the field of photonic engineering.

The student will participate within a team in the assigned project and must coordinate with the rest of the members of the team to develop the project. Both the team performance and individual performance will be assessed. Two types of projects will be offered, ones of short duration and a smaller complexity and some of long duration and higher complexity.

Lab. Project II. Students who choose this subject should develop a long-term project. The course covers the second phase of the project. If the assignment of such a project is not possible, a second project of short duration will be assigned.

LEARNING ACTIVITIES AND METHODOLOGY

Learning activities:

AF3 Theoretical and practical lectures

AF4 Lab sessions

AF5 Tutorial hours

AF6 Group working

AF7 Individual work of the student

Methodology

MD3 Practical cases resolution, problems, etc. set by the teacher in an individual or group way.

MD5 Documents and reports in an individual or group way.

ASSESSMENT SYSTEM

% end-of-term-examination/test:	20
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% of continuous assessment (assignments, laboratory, practicals...):	80
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As this is a practical design developed in a laboratory, grading will be based on achieving the different milestones of the project, this is considered SE2 system evaluation. There will be a final laboratory exam including writing of a lab report and its presentation to others that will be considered SE3. A higher weight has been assigned to SE2 in order to favor those students with the right progress rhythm in the achievement of the milestones along the project.

The students not following the continuous evaluation process may take a final examination graded up to 70% consisting in a laboratory exam where they have to demonstrate the assigned project's correct operation and understanding.

System:	Minimum weight	maximum weight
SE2	50%	80%
SE3	20%	40%

SE2 Individual or group works, including oral or written test made during the course.

SE3 Final exam