

GENERAL CHARACTERISTICS*

Type: Basic formation, Compulsory, Optional

Master Thesis, External practices

Duration: Semester

Semester / s: 2

Number of ECTS credits: 8

Languages: Spanish, Catalan, English

DESCRIPTION

BRIEF DESCRIPTION AND JUSTIFICATION

The materials technology laboratory course develops at a practical level the contents taught in the theoretical subjects. The experimental work will serve as a basis to review contents of synthesis of materials and their characterization. The objective of the laboratory is to confront the students with the typical problems of experimental work and allow them to provide solutions from the knowledge that they have learnt in the theoretical courses.

COMPETENCES

- E16 – Ability to design, plan and carry out experiments to apply specific materials to products of industrial use or devices, as well as to interpret the results obtained to determine the structure of these materials.
- T1 - Ability to communicate in English and to use English as a working language.
- CG1 - The ability to lead, direct and manage projects in academic or corporate environments adapting to the structures, needs and ways of operation of each institution.
- CB6 - To have and understand the required knowledge that provides the basis or opportunity to be innovative in the development and/or application of ideas, often in a research context.
- CB7 – To apply their knowledge and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study.
- CB8 – To integrate knowledge and deal with the complexity of formulating judgments based on information, which, being incomplete or limited, includes reflections on social and ethical responsibilities related to the application of their knowledge and judgments.
- CB9 – To communicate conclusions and the reasons that sustain them, to specialized and non-specialized audiences in a clear and unambiguous way.
- CB10 – To understand the need for life-long learning in a self-directed or autonomous way.

* These features should not be modified without the approval of the bodies responsible for academic higher-level structures (field, module and / or system).

PREREQUISITES*

The corresponding to access master studies

CONTENTS

- Nanoparticles
- Photocatalysis
- Data storage devices
- Solar cell
- Hydrogel
- CVD
- Plastic Injection

METHODOLOGY

LEARNING ACTIVITIES *

Learning Activities	ECTS credits	Competences
Lectures	0.37	E16, CB6, CB7, CB8, CB9
Seminars	0.19	E16, T1
Practical & Lab Work	6.93	E16, CG1, CB10
Presentations	0.37	E16, CG1, T1
Assessment Tasks (Exams, Continuous Assessment...)	0.15	E16, T1
TOTAL	8	

TEACHING METHODOLOGY

Students work in groups of 4-5 people with a leader that varies in each practice.

The laboratory practices are based on the generation of a device and the subsequent characterization of the material and its performance. A synthesis is proposed from one or several scientific papers and the students must, based on the characterization of the products obtained individually, draw group conclusions.

Pre-laboratory work includes a presentation in which the students review key terms for the development of the practice, as well as the description of the methods and materials that will be necessary for this. The students decide the test conditions and the characterization they perform.

* These features should not be modified without the approval of the bodies responsible for academic higher-level structures (field, module and / or system).

All the steps taken and the results should be reflected in the laboratory journal that will be reviewed regularly.

Once the experimental part is finished, each of the students must write a short report on the individual results obtained. The leader of the practice must analyze the results obtained to present the group results in the form of a scientific article in English.

ASSESSMENT

ASSESSMENT METHODS *

Assessment methods	Weight	competences
Lab Work	50%	E1, E2, CB6, CB7, CB8
Reports and Presentations	20%	E1, E2, CG2, CB9
Follow-up activities	25%	E1, E2, CG2
Participation	5%	CG2

LEARNING OUTCOMES

- The student must demonstrate his ability to design, plan and perform experiments to apply concrete materials to industrial products or devices. (E16)
- The student must demonstrate his ability to interpret the results obtained in the experiments carried out to determine the structure of materials obtained. (E16)
- The student must demonstrate their ability to communicate effectively both orally and in writing. (T1, CG1).

QUALIFICATION

The evaluation of the course will consider all the aspects that appear in the evaluation table with their corresponding weight. The main weight of the grade lies in the experimental work that includes the reports of the practices carried out (50%). The papers and presentations include the presentations prior to the practice that take place in class and the article about the practice (10% + 20%, respectively). Follow-up activities include the laboratory diary and the practice planning (15%). Participation (5%) includes attitude, assistance and initiative shown by the student in the laboratory.

ASSESSMENT OF THE COMPETENCES

For the evaluation of the E16 competence, the participation grade, the papers and presentations and the follow-up activities will be used as an indicator.

For the evaluation of CG1 competence, the participation grade will be used as an indicator

* These features should not be modified without the approval of the bodies responsible for academic higher-level structures (field, module and / or system).

The T1 competence will be evaluated from the reports and presentations grade and lab work grade.

the grade of follow-up activities and laboratory work will be used to evaluate the competencies CB6, CB7, CB8, CB9

The grade of the follow-up activities will be used to evaluate the CB10 competence

BIBLIOGRAPHY (Recommended and accessible to students.)

- Scientific papers

DOCUMENT HISTORY

PREVIOUS CHANGES

September 14, 2016, Ana Ramos

September 4 2014 Ana Ramos, Dr. Carles Colominas

CURRENT REVISION

February 26, 2019, Ana Ramos