

COURSE: MASTER THESIS

SUBJECT: Master Thesis

MODULE: Master Thesis

STUDIES: MASTER IN CHEMICAL ENGINEERING

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GENERALES FEATURES

Type: Basic training, Mandatory, Elective

Master thesis, Internship

Duration: Semestral

Semester/s: 3

Number of ECTS: 30

Language/s: English, Spanish or Catalan.

DESCRIPTION

BRIEF DESCRIPTION AND JUSTIFICATION

The Master Thesis (TFM) is the culmination of the Chemical Engineering studies (Bachelor's + Master's degree) that enable the exercise of this profession.

The TFM is an individual work of six months (30 ECTS), which the student does in IQS research groups, other universities or research centers or in companies, both national and abroad, always under the direction of an IQS professor.

The TFM has an initiation component to R & D + i, because it is about solving a real problem within the framework of a team of people who develop their research, development or innovation activity in that area. The student will be able to display and demonstrate a good part of the skills and abilities that he has acquired throughout his studies.

The TFM will lead to a written memory and will be defended before an academic tribunal.

SKILLS

- CB6 – The student has knowledge and understanding of what constitutes a basis or an opportunity to be original by developing and/or applying ideas, often in a research context.
- CB7 – The student can apply their knowledge and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to his/her field of study.
- CB8 – The student is able to integrate knowledge and handle complexity involving judgments based on incomplete or limited information, including issues on social and ethical responsibilities linked to the application of his/her knowledge and judgments.
- CB9 – The student can communicate their conclusions and their knowledge and technical/scientific basis to specialists and non-specialists in a clear and unambiguous way.
- CB10 – The student has learning abilities enabling him/her to continue studying in a way that will be largely self-directed or autonomous.
- CG1 – The student can design, manage, execute and expose a project.

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- CE3 – The student can conceptualize engineering models, apply innovative methods in problem solving and use suitable software for the design, simulation, optimization and process and system control.
- CE12 – The student has the ability to perform, to report and expose – once obtained all the credits of the curriculum – at an original dissertation performed individually before a university jury, consisting of a comprehensive project of Chemical Engineering of professional, research or business nature synthesizing the skills acquired in the studies.
- CT1 – The student is able to communicate effectively both orally and in writing with specialized partners and with non-specialized audiences in the field of Chemical Engineering.
- CT2 – The student is able to communicate in English and use English as a working language in the field of Chemical Engineering.
- CT3 – The student is able to work in multidisciplinary environments, individually or as a team member.
- CT5 – The student is able to assess the impact of Chemical Engineering in the sustainable development of society.
- CT6 – The student is able to develop learning abilities, which are needed to undertake further activities, and to recognize the need for continuing education to maintain an appropriate professional development.
- CT7 – The student is able to make a responsible practice of the profession of Chemical Engineering, incorporating ethical and deontological subjects to work responsibly in a professional environment.

PREREQUISITES

Those established in the Academic Regulations of IQS and the specific one for the Master Thesis (Guía aplicable a los Trabajos de Fin de Máster de las titulaciones de máster de IQS School of Engineering de la Universitat Ramon Llull; February 2015 and subsequent modifications).

CONTENTS

It consists of the individual realization of an original work in any of the fields of Chemical Engineering. The Master Thesis - TFM - can be done in research groups or in companies, national or foreign, depending on the orientation of each student. It will be carried out under the supervision of an IQS professor, who will act as director of the work.

Once the experimental part, field work or the corresponding part of an engineering project has been completed and in agreement with the director or directors of the work, the student will prepare the corresponding report.

The TFM will be defended before an academic court appointed for such a case.

For the presentation and defense of the TFM, the student must have passed all the ECTS corresponding to the other modules of the master.

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METHODOLOGY

TRAINING ACTIVITIES

Training activities	ECTS	Skills
Practical work / projects / laboratory.	21,0 (577 h)	CB7, CB8, CB10, CG1, CB6, CE3, CT3, CT5, CT6, CT7
Presentations.	0,4 (11 h)	CB9, CT1, CT2, CT3, CT5, CT6, CT7
Personal study activities of students.	8,5 (234 h)	CB7, CB8, CB10, CG1, CB6, CE3, CT3, CT5, CT6, CT7
Evaluation activities.	0,1 (3 h)	CB9, CT1, CT2, CT3, CT5, CT6, CT7, CT12
TOTAL	30,0 (825 h)	

EXPLANATION OF THE TEACHING METHODOLOGY

This subject uses the following teaching methodologies:

- Practical work / projects
- Oral presentation of the work by the student.
- Student's personal work to acquire the marked competences.
- Oral test (answer to questions) and presentation of a report to evaluate the acquired competences.

The report of the work and its defense can be developed in Spanish, Catalan or English.

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EVALUATION

ASSESSMENT METHODS

Methods of evaluation	Weight	Skills
Company or institution valuation (Experimental or field work).	50%	CB7, CB8, CB9, CB10, CG1, CB6, CE3, CT1, CT2, CT3, CT5, CT6, CT7, CE12
Homework and presentations (Defense before a court).	30%	CB7, CB8, CB9, CB10, CG1, CB6, CE3, CT1, CT2, CT3, CT5, CT6, CT7, CE12
Projects (Report and presentation).	20%	CB7, CB8, CB9, CB10, CG1, CB6, CE3, CT1, CT2, CT3, CT5, CT6, CT7, CE12

LEARNING OUTCOMES

Students will develop:

- Knowledge that gives the basis or opportunity to be original in the development and / or application of ideas, often in a research context.
- Ability to apply the acquired knowledge and ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study.
- Ability to integrate knowledge and face the complexity of formulating judgments based on information that, being incomplete or limited, includes reflections on the social and ethical responsibilities linked to the application of their knowledge and judgments.
- Ability to communicate their conclusions, and the knowledge and ultimate reasons that sustain them, both to specialized and non-specialized publics in a clear and unambiguous way.
- Learning skills that allow them to continue studying in a way that will be largely self-directed or autonomous.
- Ability to design, manage, perform and submit a project.
- Ability to communicate effectively both orally and in writing with specialized and non-specialized public speakers.
- Ability to communicate in English and to use English as a working language.
- Ability to work in a multidisciplinary environment individually or as a member of a team.
- Ability to assess the impact of Chemical Engineering on the sustainable development of society.
- Ability to develop learning skills, necessary to undertake subsequent activities, and recognize the need for continuing education for proper professional development.
- Ability to perform a responsible practice of the profession incorporating ethical-deontological arguments to work in a professional environment in a responsible manner.

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- Ability to perform, present and defend before a university court an original exercise carried out individually, consisting of a comprehensive project of Chemical Engineering of a professional, research or business nature in which the competences acquired in the teachings are synthesized.

EVALUATION

The student must expose (defend) his work in a public session in front of an academic court formed by the director of the work and two other members. At least one of them is not a professor of the master.

The qualification of the Master Thesis – TFM – is unique and granted by the court. For it:

1. The director of the TFM will deliver to the Deanery on the date required by him, prior to the defense of the TFM, a report on the student, which will include:
 - a. The valuation of the institution or company (50% of the final grade), which will include the evaluation of the experimental or field work and, in the case of having done outside of IQS, a report containing the company or external center.
 - b. The evaluation of scientific and technical competences, the ability of written communication and teamworking, understanding of the future, the need for continued training, etc.
 - c. Observations, including comments on the student's performance and behavior.
2. At the time of the defense, the court will make the qualification of:
 - a. The project (20% of the final grade) about the quality of the TFM memory.
 - b. The work and its exposition (defense before the court, 30% of the final grade).
 - c. The court will complete the evaluation of the competences.

EVALUATION OF SKILLS

The evaluation of competencies is carried out in accordance with what is indicated in the previous section.

BIBLIOGRAPHY

- Each work will have its own specific bibliography.



PERSONA CIENCIA EMPRESA
Universitat Ramon Llull

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DOCUMENT RECORD

PREVIOUS CHANGES

J. Sempere. 28/02/2015. 03/12/2015

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