



COURSE: INDUSTRIAL SAFETY

SUBJECT: Industrial Safety

MODULE: Process and product engineering

PROGRAM: MASTER IN CHEMICAL ENGINEERING

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GENERAL FEATURES *

Type: Basic Training, Compulsory, Elective

Master thesis, Internship

Duration: Semester

Semester/s: 2

Number of ECTS credits: 3

Language/s: Spanish (includes some activities in English).

DESCRIPTION

BRIEF DESCRIPTION AND JUSTIFICATION

This subject provides the ability to know how to manage safety within an industrial environment, especially in the chemical industry. From the identification and evaluation of risks and implementation of prevention and protection measures in industrial environments to the application of methods to ensure the correct management of safety and prevention.

All this is developed in four main areas: prevention of occupational risks, identification and evaluation of risks, identification, quantification and risk management in the chemical industry and evaluation of major accidents.

COMPETENCES

- 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.
- 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.
- CT5 - The student is able to assess the impact of Chemical Engineering in the sustainable development of society.
- 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.
- CE5 – The student can design, build and implement methods, processes and systems for integrated management of supplies and wastes - solid, liquid and gaseous – in industries, being capable of assessing their impact and their risks.

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

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- CE6 - The student can design, build and implement methods, processes and systems for integrated management of supplies and wastes - solid, liquid and gaseous – in industries, being capable of assessing their impact and their risks.

PREREQUISITES*

Admission to the Master's Degree in Chemical Engineering in *Universitat Ramon Llull*.

CONTENTS

1. Fundamental concepts.
2. Introduction to the prevention of occupational risks.
3. Qualitative methods for the identification of hazards.
4. Semiquantitative methods for risk analysis.
5. Quantitative methods.
6. The human factor.
7. Signaling and labeling.
8. The REACH regulation.
9. Explosive atmospheres.
10. Thermal safety of chemical processes.
11. Major accidents.
12. Estimation of consequences.
13. Quantitative risk analysis and land use planning.
14. Self-protection plans and emergency plans.

METHODOLOGY

LEARNING ACTIVITIES*

Learning Activities	Credits ECTS	Competences
Lectures	0,86	CB8, CT5, CE5
Case and Problem-Solving Sessions	0,20	CB8, CB9, CT7, CE6
Seminars	0,12	CT5, CT7, CE5, CE6
Classroom Presentations	0,02	CB9, CT1
Personal Study Activities	1,72	CB8, CT7
Evaluation Activities	0,08	CB8, CB9, CT7, CB5
TOTAL	3,00	

TEACHING METHODOLOGY

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This subject will use the following teaching methodologies:

- The didactic methodology is based on sessions of exposition of concepts in which the fundamental contents of the subject are presented to the student.
- Resolution of exercises, approach / resolution of problems and exposure / discussion of cases by a professor with the active participation of students.
- Instruction carried out by a teacher with the objective of reviewing, discussing and resolving doubts about the materials and topics presented in the concepts presentation sessions and in the resolution sessions of exercises, problems and cases. Includes visits to companies and facilities.
- Oral presentation by the students.
- Student's personal work to acquire the competences of each subject.
- Written tests to evaluate the competences acquired.

EVALUATION

ASSESSMENT SYSTEM *

Evaluation Methods	%	Competences
Final Exam	30%	CB8, CB9, CT5
Follow-up Activities	20%	CB8, CB9, CT5, CE6
Reports and Presentations	40%	CT1, CB9
Participation	10%	CT5, CT7

LEARNING OUTCOMES

The student will have acquired:

- The capacity 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.
- The capacity to communicate their conclusions and their knowledge and technical/scientific basis to specialists and non-specialists in a clear and unambiguous way.
- The capacity to communicate effectively both orally and in writing with specialized partners and with non-specialized audiences in the field of Chemical Engineering.
- The capacity to assess the impact of Chemical Engineering in the sustainable development of society.

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- The capacity to make a responsible practice of the profession of Chemical Engineering, incorporating ethical and deontological subjects to work responsibly in a professional environment.
- The capacity to manage and supervise all kinds of facilities, processes, systems and services in different industrial areas related to Chemical Engineering.
- The capacity design, build and implement methods, processes and systems for integrated management of supplies and wastes - solid, liquid and gaseous – in industries, being capable of assessing their impact and their risks.

QUALIFICATION

The final exam of the subject has a value of 30% of the final grade.

The activities of follow-up of the learning of this subject consist in the resolution of exercises and cases that are carried out in parallel to the development of the lectures. Its weight on the whole of the final grade is 20%.

The works and presentations have a value of 40%. They consist in the realization of a report and its corresponding presentation in class on selected topics from a list proposed by the professor, related to some aspects of industrial safety.

The qualification for participation is obtained from the intervention of the students in class asked questions and in class discussions. It constitutes 10% of the final grade.

The specific weight of each evaluation item will be fixed at the beginning of the course

ASSESSMENT OF THE COMPETENCES

The assessment of the competences will be carried out as indicated in the table of Evaluation Methods.

When two competences are evaluated by two evaluation methods, the rating assigned to each competence is the weighted average of the grade obtained by each evaluation method.



PERSONA CIÈNCIA EMPRESA
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BIBLIOGRAPHY (Recommended and accessible to students.)

DOCUMENT HISTORY

PREVIOUS CHANGES

27th June 2014, Dr. Eduard Serra

ÚLTIMA REVISIÓN

25th February 2019, Dr. Eduard Serra