

Academic Year/course: 2021/22

## 60641 - Environmental legislation and management systems

### Syllabus Information

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**Academic Year:** 2021/22

**Subject:** 60641 - Sistemas de gestión y legislación medioambiental

**Faculty / School:** 100 - Facultad de Ciencias

**Degree:** 540 - Master's in Industrial Chemistry

**ECTS:** 9.0

**Year:** 1

**Semester:** Annual

**Subject Type:** Compulsory

**Module:**

## 1. General information

### 1.1. Aims of the course

Recognize and design the content of the main technical documents of Quality Management , Environmental Management and PRL Management System.s

Recognize the applicable legislation in Environmental and Risk Prevention matters.

To have a general knowledge of the principles on which the Standardized Quality Management Systems are based in the test laboratories.

Provide specific training in the field of Environmental Law applied to the field of Chemistry.

Encourage reflection and debate on the scope and limits of the Law that regulates the Environment applied to the field of Chemistry.

These approaches and goals are aligned with the Sustainable Development Goals of the United Nations 2030 Agenda, which are listed below, in such a way that the acquisition of the learning results of the subject provides training and competence to contribute to some extent to their achievement: Objective 4: Quality Education. Objective 5: Gender Equality. Goal 8: Decent work and economic growth. Objective 9: Industry Innovation and infrastructure. Objective 10. Reduction of inequalities. Objective 12. Responsible consumption and production. Goal 13. Climate Action.

### 1.2. Context and importance of this course in the degree

Within the framework of the Master's Degree in Industrial Chemistry, the course "Management Systems and Environmental Legislation" deals with concepts and professional tools that complement other more specific subjects.

It is a basic of current principles in Industrial Chemistry and it presents a wide diversity of concepts and referential aspects.

### 1.3. Recommendations to take this course

It is recommended to have basic knowledge on Management Systems. Also, it is advisable to have training in statistics and chemometrics tools. The handling of worksheets, like excel, is necessary for the resolution of problems.

## 2. Learning goals

### 2.1. Competences

Recognize the impact of chemical products and processes in the Environment and propose methods to evaluate and reduce it.

Know, implement and develop management systems in the company.

Apply existing legislation on the use of chemical substances and preparations.

Develop a complex work in the environment of Industrial Chemistry, participating in the stages of bibliographic search,

planning, obtaining results and interpretation and dissemination of them.

Master the technical and management tools for research and development of processes, products and services in the chemical and related industries, including skills in knowledge management and ability to develop and apply original ideas and to lead projects.

Knowledge that provides a basis or opportunity to be original in the development and / or application of ideas, often in a research context.

Know how to apply the knowledge and problem-solving skills in new or unfamiliar environments within broader (or multidisciplinary) contexts related to your area of study.

Being able to integrate knowledge and face the complexity of making judgments from information that, incomplete or limited, includes reflections on social and ethical responsibilities linked to the application of their knowledge and judgments.

Know how to communicate their conclusions and the latest knowledge and reasons that support them to specialized and non-specialized audiences in a clear and unambiguous way.

Have the learning skills that allow them to continue studying in a way that will be largely self-directed or autonomous.

Manage, discriminate and select sources of bibliographic information.

Effectively use information and communication technologies as a working tool.

Use scientific English to obtain information and transfer it.

Manage quality according to ISO 9001.

Manage environmental aspects according to ISO 14001.

Manage health and safety according to OSHAS 18001.

Manage chemical and material testing laboratories according to ISO 17025.

Address other documented and / or standardized management systems.

To know the environmental legal norm in its more general aspects. To deepen in the aspects related to the environmental impact of the products and processes studied.

Know the legal regulations related to occupational safety in its more general aspects. To deepen in the aspects related to the prevention of risks and labor security of the products and processes studied.

Have advanced knowledge about the REACH and CLP regulations.

## 2.2. Learning goals

- Have an overview of the requirements of the different standard management systems in the business world and the methodology to be followed in their documentation, implementation, and subsequent certification. Also, the tools used by the company in order to ensure compliance with legal requirements to justify, the activities of the most widespread standards of management systems, as well as the standards that establish the requirements of such systems.

They will be prepared to justify the activities of the most widespread standards of management systems.

They will be trained to analyze the different environmental regulations at International, European and National levels.

They will be able to differentiate between quality models that are applied in the laboratory from models applied to the management systems.

## 2.3. Importance of learning goals

They will allow us to understand the principles of the environmental standards that affect the chemical sector, distinguishing the nature of the different applicable regulations.

It would be possible to analyze and justify the application of environmental regulations to the chemical sector.

The results of the learning obtained in the subject are necessary to manage the laboratories according to the most important principles and norms. In a context of great technological development, the current needs for demonstration of quality and reliability are evident.

# 3. Assessment (1st and 2nd call)

## 3.1. Assessment tasks (description of tasks, marking system and assessment criteria)

Evaluation, with continuous assessment, through the resolution of cases throughout the course

30% of final grade: qualification 1

Evaluation of a work-report based on the application of the principles of the subject in real areas and carried out by each of the students, by means of presentation with discussion.

30% of final grade: q 2

Evaluation by means of the accomplishment of a written test, or/and oral, on the contents of the subject in the call of exams of the global evaluations.

40% of final grade: q 3

In the periods of global exams, the student will be evaluated of all those activities that have not passed satisfactorily during the course

Note 4

The final grade can be obtained considering:

I) progressive notes: final score =  $0.30 \times q_1 + 0.30 \times q_2 + 0.40 \times q_3$

II) scores of the global exams: final score =  $0.50 \times q_3 + 0.50 \times q_4$

The number of official examinations to which the enrollment gives right (2 by matriculation) will be in accordance with the Regulation of official titles adapted to the European Space of Higher Education in the Universidad de Zaragoza and the Regulation of Evaluation of the University of Saragossa. The latter will also adjust the general criteria for the design of the tests and the qualification system and, according to it, the schedule, place and date of the review will be made public when the grades are published.

According to the Regulation of Learning Evaluation Rules of the Universidad de Zaragoza, the student will have the right to a global test in which the competences developed in the subject will be evaluated. This global test will be done on the date scheduled by the examination schedule of the Faculty of Sciences.

## 4. Methodology, learning tasks, syllabus and resources

### 4.1. Methodological overview

The methodology followed in this course is oriented towards the achievements of the learning objectives, it favors the understanding of the principles, issues and processes related with Management Systems in organizations and laboratories. Also those concerning with official regulations in particular it focuses with EU directives. A wide range of teaching and learning tasks are implemented, such as theory sessions, laboratory sessions and different assignments.

Students are expected to participate actively in the class throughout the semester.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials, including a discussion forum.

Further information regarding the course will be provided on the first day of class.

### 4.2. Learning tasks

This is a 9 ECTS course organized as follows:

- **Lectures** (5 ECTS: 50 hours). Lecture notes will be available for the students, at the end of each topic. The lecturer will also assign unsolved problems which could be re-submitted to the teacher when solved.
- **Case study**(2-3 ECTS: 20-30 hours). Sessions that take place during the first and second semester. Students are provided in class with real cases in order to discuss and re-solve them.
- **Practice Sessions and Seminars-** (1-2 ECTS: 10-20 hours). Planned sessions that take place during the first and second semester in computer class (Building A). Students are provided in advance with tasks and guidelines for each session. In seminars, students work on themes of interest for the course. Also they have expositions and discussions with all students and profs at the end of the second semester.

### 4.3. Syllabus

The course will address the following topics:

#### Topic 1. Basis of management systems

1. Scope.
2. Standards, rules and Law.
3. Standardization, certification, accreditation.
4. Manual, Procedures and Records.
5. Auditing.
6. Process Management.
7. Practical exercises.

#### Topic 2. Quality management

1. a. History of quality management.
2. b. Statistics.
3. c. ISO 9001 Standard.
4. d. Deployment and certification.
5. e. Practical exercises.

#### Topic 3. Environmental management systems

1. a. Legal regulations.
  1. i. Air quality and Noise
  2. ii. Water
  3. iii. Soil
  4. iv. Waste
  5. v. Integrated environmental control model
3. b. Administrative procedure.
4. c. ISO 14001 standard.
5. d. The EMAS management instrument.

6. e. The EU Ecolabel.
7. f. Practical exercises.

#### **Topic 4. Occupational health and safety management systems**

1. The history of the Occupational safety.
2. Legal regulations.
3. Occupational Health and safety integration.
4. Work-related Harm.
  1. Work-related Injuries
    1. Machines
    2. Products
    3. Facilities
    4. Activities
  2. Work-related disease/illness
    1. Occupational health
    2. Ergonomics
    3. Psycho-sociology applied
5. Occupational Health and safety risk management.
  1. Legal requirements
  2. OHSAS 18001
  3. Practical exercises

#### **Topic 5. Quality Management in the laboratory**

1. Guides of Quality in the Analytical Laboratory.
2. Traceability, Standards, Uncertainty and Calibration in chemical measurements
3. Interlaboratory Exercises: Types and principles. International ISO 17043. PT schemes. Assessment of results. Chemometric studies and assessment of results.
4. Standard ISO 17025: Quality Assurance and Quality Control in accredited labs. The standard: management and technical parts.
5. Good laboratory practices: GLP. Regulation. Goals and implementation. Chapters of the law. Principal figures: Unit of Quality Assurance. Roles of Director and Research Leader in the studies.

#### **Topic 6. European Union (EU) and Environmental Law**

1. Environmental Legal Concept. Environmental International Law. EU Environmental Law.
2. Programmes of Action. The European Agency of Environmental Law.
3. Principles of the EU Environmental Law. Public and private agents of environmental protection.
4. Human Rights and Chemicals

#### **Topic 7. Chemicals Legislation**

1. REACH Regulations: General Overview. REACH Regulations: Registration. Evaluation. Authorisation. Restrictions. Information. The European Chemicals Agency (ECHA).
2. CLP Regulation: Classification, Labelling. Packaging of substances and mixtures. Nanomaterials.
3. Chemicals, Environment and Consumer Protection. Food products. Medicines.
4. Chemicals, Environment and Industry. Biotechnology.
5. Hazardous substances. Seveso Directives. Carcinogens.
6. Chemicals, Environment and Agriculture. Pesticides. Biocidal Products Legislation.
7. Dioxins, Furans, Polychlorinated biphenyls and Health.
8. The Ambient Air Quality. Volatile Organic compounds. Persistent Organic pollution.
9. EU Waste legislation. Medical Waste.
10. PIC Regulation. Export and import of Chemicals

#### **4.4. Course planning and calendar**

## Provisional course planning:

- Weeks 1-10: Sections 6-7
- Weeks 11-20: Sections 1-4
- Weeks 21-28: Sections 5

Further information concerning the timetable, classroom, assessment dates and other details regarding this course, will be provided on the first day of class or please refer to the Faculty of Science <http://ciencias.unizar.es/>, <http://ciencias.unizar.es/web/horarios.do> as well as the bulletin board of the Department of Analytical Chemistry.

Specific activities, such as work public exposition and discussion will be communicated in advance .They will take place throughout the course will be communicated to the students well in advance.  
The global evaluation exams will take place on the dates determined in the calendar of the Faculty of Sciences (consult the bulletin board or the web page <http://ciencias.unizar.es/web/horarios.do>)

### 4.5. Bibliography and recommended resources

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?id=9740>