

**COURSE DATA****Data Subject**

<b>Code</b>	45012
<b>Name</b>	Seguridad e Higiene
<b>Cycle</b>	Master's degree
<b>ECTS Credits</b>	3.0
<b>Academic year</b>	2022 - 2023

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. Period year</b>
2249 - M.D. in Chemistry	Faculty of Chemistry	1 Annual

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
2249 - M.D. in Chemistry	7 - Optatividad en Química	Optional

**Coordination**

<b>Name</b>	<b>Department</b>
BAEZA BAEZA, JUAN JOSE	310 - Analytical Chemistry

**SUMMARY**

The use of chemicals in the workplace exposes users to various occupational hazards, especially those related to safety and health. Therefore, the objective of this course is to study the prevention of accidents and occupational diseases as required by society and legislation.

Students who take this course will acquire the knowledge, skills and competencies related to occupational Safety and Health, general and specific risks and their prevention in the chemical sector, basic elements of risk prevention management and first aid. These aspects coincide with the training program for the performance of basic level functions for activities included in sections b) and c) of annex I of the R.D. 39/1997, Regulation of Prevention Services, with additional training on those specific risks and their prevention in the chemical sector.



The National Commission on Safety and Health at Work has identified as an unfulfilled measure promoting a preventive culture in university education through the transversal integration of prevention occupational hazards in the study plans and proposed including such content in the curricular implementation of university degrees.

## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

### Other requirements

Previous knowledge of chemistry taught in the degrees indicated in the recommended entry profile for Master's students is required.

## OUTCOMES

### 2249 - M.D. in Chemistry

- Students can apply the knowledge acquired and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study.
- Be able to solve complex chemistry problems, whether in the academic, research or industrial application areas at a specialization or masters-level.
- Possess the necessary skills to develop multidisciplinary activities within the field of chemistry at the master's level.
- Be able to design, conduct, analyse and interpret complex experiments and data, as a specialist.
- Apply the advanced theoretical and practical knowledge gained in the different specialties of chemistry to R&D and innovation.

## LEARNING OUTCOMES

- Know how to approach from the experimental and theoretical point of view real problems of a specialized scientific and / or technological nature, as well as propose solutions, in different areas of Chemistry.
- Know how to function in professional scientific-technological environments related to industry, research, development and / or innovation.



- Know how to transmit and disseminate results of scientific-technological activity.
- Describe the basic principles of safety and health at work.
- Identify and classify general risks in the workplace and specific ones in the chemical field.
- Interpret the information about the dangerousness of the chemical substances contained in the label and safety data sheet of the products.
- Evaluate the general and specific risks related to the handling and storage of dangerous substances.
- Establish preventive measures for the assessed risks, both collective and individual (PPE).
- Implement an emergency plan.
- Knowing how to apply the knowledge acquired to contribute to the Sustainable Development Goals (SDGs), such as the sustainable management of water, raw materials and energy sources (SDGs 6 and 7) and to develop a professional work with the least environmental impact and using alternative raw materials (SDGs 11, 14 and 15)

## DESCRIPTION OF CONTENTS

### 1. Basic concepts on safety and health at work

Work and health: professional risks.

Working conditions and risk factors.

Damages derived from work. The work accidents and the professionals sick. Other pathologies derived from work.

Basic regulatory framework regarding the prevention of occupational hazards.

Basic rights and duties in this topic.



## **2. General risks and their prevention**

Risks linked to security conditions.  
Risks related to the working environment.  
Workload, fatigue and job dissatisfaction.  
Elementary risk control systems. Collective and individual protection.  
Emergency and evacuation plans.  
The health control of workers.

## **3. Specific risks and their prevention in the chemical sector**

Chemical agents and hazardous chemical agents.  
Identification, packaging and labeling of chemical agents. REACH and CLP regulations.  
Risk factors and routes of exposure.  
Chemical risk assessment.  
Control of chemical risk. Ventilation and Personal Protective Equipment.  
Storage, handling and transportation of hazardous chemicals.  
Emerging Chemical Hazards: Particulates (Nanomaterials, Diesel Engine Exhaust Gases, Man-Made Mineral Fibers); allergens and sensitizing agents; carcinogens, mutagens and substances with toxic effects for reproduction; combined risks.

## **4. Basic elements of risk prevention management**

Public bodies related to safety and health at work.  
Organization of preventive work. Basic routines:  
- Preventive organization.  
- Occupational risk prevention plan  
- Documentation: collection, preparation and files

## **5. First aid**

- General advice.  
- Activation of the emergency system.  
- Links in the relief chain.  
- Primary evaluation of a crashed.  
- Hemorrhages.  
- Emergency kit.

**WORKLOAD**

ACTIVITY	Hours	% To be attended
Theory classes	25,00	100
Tutorials	5,00	100
Attendance at events and external activities	5,00	0
Development of group work	5,00	0
Study and independent work	10,00	0
Readings supplementary material	10,00	0
Preparation of practical classes and problem	15,00	0
<b>TOTAL</b>	<b>75,00</b>	

**TEACHING METHODOLOGY**

This course will be taught through participatory lecture-type theoretical classes, classes with directed practical activity, seminars and workshops where, among other training activities, will be carried out, solving applied practical problems aimed at evaluating the understanding of the subject by the student.

In addition, use will be made of the Virtual Classroom platform, a virtual space where all the information deemed appropriate for the development of teaching and the control of student participation in the proposed activities is deposited.

Due to organizational reasons, during the 2022-2023 academic year, attendance has been reduced to 80%

**EVALUATION**

The evaluation will be based on a written exam (70%) and continuous evaluation (30%), corresponding to participatory assistance, problem solving and assessable activities carried out inside and outside the classroom.

It will be necessary to obtain a 5.0 out of 10.0 in each part to average them. The final pass will be obtained with a minimum overall grade of 5.0 out of 10.0



The qualification that comes from the assessable activities carried out in the classroom will NOT be recoverable by taking other types of tests.

The written exam will take place at the end of the course.

## REFERENCES

### Basic

- Curso de capacitación para el desempeño de funciones de nivel básico. Instituto Nacional de Seguridad y Salud en el Trabajo (INSST), 2019. Disponible on-line en <https://www.insst.es/documentacion/catalogo-de-publicaciones/curso-de-capacitacion-para-el-desempeno-de-funciones-de-nivel-basico-ano-2019>
- Manual bàsic de Seguretat i Salut en el Treball. Institut Valencià de Seguretat i Salut en el Treball (INVASSAT). 2014-19. Disponible on-line en <http://invassat.gva.es/va/manual-basico-sst>

### Additional

- Materiales del Instituto Nacional de Seguridad y Salud en el Trabajo (INSST) <https://www.insst.es/>
- Portal de Riesgos Químicos del INSST <https://www.insst.es/materias/riesgos/riesgos-quimicos>