

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

<b>Code</b>	34508
<b>Name</b>	Risks in the workplace and environmental toxicology
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	4.5
<b>Academic year</b>	2023 - 2024

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. year</b>	<b>Period</b>
1204 - Degree in Medicine	Faculty of Medicine and Odontology	4	First term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1204 - Degree in Medicine	18 - Optional subjects	Optional

**Coordination**

<b>Name</b>	<b>Department</b>
BERRADA RAMDANI, HOUDA	265 - Prev. Medicine, Public Health, Food Sc., Toxic. and For. Med.

**SUMMARY**

The subject of occupational hazards and environmental toxicology (Riesgos laborales y toxicología ambiental) (34508) is an optional subject character of Medicine degree, taught at the Faculty of Medicine of the University of Valencia. This subject has in the current curriculum of a total of 4.5 ECTS taught in the first half.

The main objective is the formation on toxicology for interpreting the scientific data on the toxic effects of chemical, physical and biological agents in the workplace in order to acquire knowledge leading to the toxicological risk assessment and their prevention.

For this knowledge is provided:

- Basic Toxicology



- Methods of assessment of toxicity.
- Pathophysiological processes toxic origin.
- Toxic effects of physical and chemical agents in the workplace.
- Characterization of risks through hazard identification and assessment
- Exposure to toxic substances in the workplace. Safety limits .
- Analytical Toxicology and regulatory work environmentd.

## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

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

### Other requirements

To study occupational hazards and environmental toxicology, the knowledge of a number of basic concepts that are part of the content of the subjects taught during the previous courses of grade is necessary.

## COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

### 1204 - Degree in Medicine

- Students must be able to apply their knowledge to their work or vocation in a professional manner and have acquired the competences required for the preparation and defence of arguments and for problem solving in their field of study.
- Students must have the ability to gather and interpret relevant data (usually in their field of study) to make judgements that take relevant social, scientific or ethical issues into consideration.
- Recognise health determinants in population, such as genetic ones, dependent on sex, lifestyle, demographic, environmental, social, economic, psychological and cultural.
- Organizar y planificar adecuadamente la carga de trabajo y el tiempo en las actividades profesionales.
- Capacidad para trabajar en equipo y para relacionarse con otras personas del mismo o distinto ámbito profesional.
- Criticism and self-criticism skills.
- Capacity for communicating with professional circles from other domains.



- Acknowledge diversity and multiculturality.
- Consideration of ethics as a fundamental value in the professional practise.
- Working capacity to function in an international context.

## **LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)**

With the completion of this course, students will acquire the following skills and abilities:

- Understand the toxic agents on health in the workplace.
- Understanding the mechanisms of action of toxins that act with greater frequency in acute intoxication and / or reports at work.
- Ability to Solve toxicological basis, relating the chemical and structural properties of toxins in the workplace.
- Skill and ability to solve problems toxicological
- Knowledge of toxicology through the opportunities provided by the Internet, and ability to relate to the presence of toxins in the workplace with the effects that can cause.
- Preparing students for conducting research work related to the toxicology work
- Establish preventive measures both individual and collective level.
- Evaluate the importance of the influence of poor working conditions on health.
- Recognize legal requirements and the structure of the prevention of occupational risks in Spain

## **DESCRIPTION OF CONTENTS**

### **1. THEORETICAL TEACHING PART**

1. Occupational conditions and health.
2. Occupational toxicology. Types of toxic agents in the workplace. Characteristics of occupational poisonings.
3. Particular toxicokinetic characteristics in occupational exposure.
4. Types of mechanisms of toxic agents in the workplace depending on the route and time of exposure.
5. Main local and systemic toxic effects due to occupational exposure. Main chronic toxic effects produced by toxic agents. Toxicological experimentation. Toxicity assessment of industrial agents.
6. Environmental limit values (VLA). Biological limit values (VLB).
7. Toxic effects of drugs on the workplace.
8. Toxic effects of organic compounds in the workplace.
9. Toxic effects of biological and physical agents.
10. Workers' Health Surveillance. Legal and organizational framework for occupational risk prevention.

**2. TEACHING PRACTICE**

The practical teaching is structured in seminars and computer practices, with a total of 11 sessions.

COMPUTER PRACTICES (clinical cases): six practices of two hours each session

1. ENVIRONMENTAL TOXICOLOGY, CHEMICAL SAFETY AND TOXICITY PREVENTION.
2. SOURCES OF TOXICOLOGICAL INFORMATION APPLIED TO ENVIRONMENTAL TOXICOLOGY.
3. OCCUPATIONAL ILLNESS, WORK ACCIDENT AND PHYSICAL AGENTS
4. CASES OF TOXICITY DUE TO CHEMICAL PRODUCTS IN THE WORKPLACE
5. EVALUATION OF EXPOSURE TO CHEMICAL CONTAMINANTS.
6. EVALUATION AND INTERPRETATION OF RESULTS OF ACUTE, REPEATED DOSE AND CHRONIC TOXICITY STUDIES

Seminars: five seminars of two hours each session that deal with the analysis of toxic risk with the approach of virtual situations of exposure to toxic agents in different work sectors so that the student acquires skills to identify potential hazards, evaluate the dose-response relationship, assess the exposure, characterize the risk and propose preventive measures.

**WORKLOAD**

ACTIVITY	Hours	% To be attended
Theory classes	19,00	100
Computer classroom practice	12,00	100
Seminars	10,00	100
Tutorials	4,00	100
Development of individual work	4,00	0
Study and independent work	7,00	0
Readings supplementary material	3,00	0
Preparation of evaluation activities	4,50	0
Preparing lectures	39,00	0
Preparation of practical classes and problem	5,00	0
Resolution of case studies	5,00	0
<b>TOTAL</b>	<b>112,50</b>	

**TEACHING METHODOLOGY**

**Teaching methodology:**



The development of the course will be structured as follows:

**Theoretical classes** where the teacher provides the student with a global vision of the subject, in addition to the information necessary to understand the contents of the subject. For the follow-up of the class, the student is recommended to review in advance the material that the teacher leaves in the virtual classroom.

**Seminar sessions** in computer classroom specialized in groups. They are organized into two groups of students in order to guide the students and determine the functioning of the course. In these classes, the student is encouraged to search for additional or complementary information, guided by the use of the necessary bibliographic sources through access to useful databases in Toxicology. The last session of the seminars, the students expose to the rest of the group the results obtained on the chosen toxic agent.

The gender perspective and the Sustainable Development Goals (SDGs) will be incorporated into the development goals (SDGs) into teaching, whenever possible.

## EVALUATION

**Theoretical evaluation: 50%** of the final grade. It will be carried out by means of a written test of multiple choice questions that will deal with the contents of the theoretical program and will have the objective of evaluating the acquisition of knowledge. All questions in the quiz have the same value with only one valid answer. Each correctly answered answer will be valued with 0.3 points. Each wrong answer will subtract 0.1 points. Unanswered answers will not be considered.

**Practical evaluation: 50%** of the final grade. It will be carried out through the evaluation of participation in the different activities of seminars and practices, as well as the evaluation of a memory that evaluates the acquisition of skills related to general and specific competences by characterizing the risk of a toxic agent. It is a requirement to access the advance call for this subject that the student has completed all of their internships.

Students are reminded of the importance of carrying out evaluation surveys on all the teaching staff of the degree subjects.

## REFERENCES

### Basic

- Nogué, S. Toxicología clínica. Elsevier, Barcelona, 2019.
- Gil F. Tratado de Medicina del Trabajo, 3ª ed. Elsevier, Barcelona, 2018.
- Casarett y Doull. Fundamentos de Toxicología. Madrid, McGraw-Hill Interamericana, 2005.
- Repetto M. Toxicología Fundamental. 4 ed. Díaz de Santos, Madrid (2009).





**Additional**

- Recursos-e Salut: ClínicaKey Sudent. Elsevier (Scopus, ScienceDirect).  
[uv-es.libguides.com/RecursosSalut/BibliotecaSalut](http://uv-es.libguides.com/RecursosSalut/BibliotecaSalut)

