COURSE DATA

DATA SUBJECT

Code: 34508
Name: Risks in the workplace and environmental toxicology
Cycle: Undergraduate Studies
ECTS Credits: 4.5
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
1204 - Degree in Medicine	Facultat de Medicina i Odontologia	3	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1204 - Degree in Medicine	Optional subjects	ELECTIVES

COORDINATION

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SUMMARY

The subject of occupational hazards and environmental toxicology (Riesgos laborales y toxicologia 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 of 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 / LEARNING OUTCOMES

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Acknowledge diversity and multiculturality.

Capacity for communicating with professional circles from other domains.

Consideration of ethics as a fundamental value in the professional practise.

Criticism and self-criticism skills.

Proper organisation and planning of the workload and timing in professional activities.

Recognise health determinants in population, such as genetic ones, dependent on sex, lifestyle, demographic, environmental, social, economic, psychological and cultural.

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.

Team-working skills and engaging with other people in the same line of work or different.

Working capacity to function in an international context.

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

PRESENCIAL ACTIVITIES

Activity	Hours
Tutorials	4,00
Theory	19,00
Seminar	10,00
Computer classroom practice	12,00
Total hours	**45,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	4,00
Independent study and work	10,00
Preparation of lessons	44,00
Preparation for assessment activities	4,50
Resolution of case studies	5,00
Total hours	**67,50**

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, the respect for diversity, and the sustainable development goals (SDGs) will be incorporated 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.

Attendance at practical activities is mandatory. The student is considered to meet this requirement if he or she has attended a minimum of 80% of these activities and has adequately justified the impossibility of attending the remaining sessions due to the occurrence of a cause of force majeure. It will be essential to comply with this requirement to pass the subject.

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

REFERENCES

- Nogué, S. Toxicología clínia. 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).
- RECURSOS e-Salut:

    - ClinicalKey Student Medicina, Odontologia y Enfermería [https://uv-es.libguides.com/RecursosSalut]
    - Acces Medicina [https://uv-es.libguides.com/Access_Medicina]
    - Médica Panamericana [https://uv-es.libguides.com/Medica_Panamericana]