COURSE DATA

DATA SUBJECT

Code: 33993
Name: Workplace Toxicology
Cycle: Undergraduate Studies
ECTS Credits: 4.5
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
1103 - Degree in Food Science and Technology	Facultat de Farmàcia i Ciències de L'alimentació	4	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1103 - Degree in Food Science and Technology	Occupational toxicology	ELECTIVES

COORDINATION

FUENTES LOPEZ CRISTINA

JUAN GARCIA ANA

SUMMARY

The Occupational Toxicology (33993) is an elective fourth-year of Graduate in food science and technology, in the Faculty of Pharmacy, University of Valencia. This course provides the current curriculum for a total of 4.5 ECTS credits given half-yearly.

The fundamental objective of this subject is to obtain a toxicological training that allow to interpret scientific data relative to the toxicological effects of a chemical agent or mixtures and the conditions of human and work exposures in order to acquire knowledge for toxicological risk assessment at workplace and its prevention.

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 Toxicology, knowledge of a number of basic concepts of biology, chemistry and biochemistry are needed. These concepts are part of the contents of the subjects taught during the previous courses in the Graduate in food science and technology

COMPETENCES / LEARNING OUTCOMES

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Assess exposure to toxic agents and know the limits of occupational exposure.

Conocer y manejar las fuentes de información básicas relacionadas con la Toxicología laboral.

Keep a receptive attitude and understand the meaning of the knowledge transmitted.

Know about the methods most commonly used for the analysis and control of toxics in the workplace.

Know the basics of occupational toxicology.

Know the procedures of evaluation and control of occupational toxic hazards.

Know the toxic health hazards of the professional environment.

Ser consciente de la importancia de su participación activa en el proceso de su propio desarrollo intelectual y científico.

Understand the general principles of biological control.

DESCRIPTION OF CONTENTS

1. Occupational Toxicology. Introduction.

Topic 1. Occupational Toxicology: Introduction. Evolution and related sciences. Current branches of toxicology. Bibliography. Toxicological concepts. Selectivity, sensitivity and margin of safety

2. Toxicity assessment

Topic 2. Risk assessment . Occupational exposure limits. Exposure assessment of chemicals in industry.
Topic 3. Occupational health. Risk of exposure. Physical and biological risks
Topic 4. Evaluation of exposure to chemical substances.
Topic 5. Biological monitoring of contaminants

3. Exposure to toxic agents in the workplace

Topic 6. Dust from mineral , vegetal and animal particles. Occupational asthma.
Topic 7. Metals. Main sources of occupational exposure. Aluminum. Beryllium. Chrome. Arsenic. Cadmium. Nickel. Mercury. Cobalt. Lead.
Topic 8. Solvents. Toxicity. Main sources of occupational exposure. Aliphatic hydrocarbons. Alicyclic hydrocarbons. Aromatic hydrocarbons.
Topic 9. Halogenated aliphatic and alicyclic hydrocarbons.
Topic 10. Alcohols, aldehydes and acids.
Topic 11. Glycols, derivatives and polyhydroxylated substances.
Topic 12. Mercaptans, ethers and ketones.
Topic 13. Phenol and phenol products.
Topic 14. Amino and nitro products. Formation of nitrosamines.
Topic 15. Gas and vapors irritating and asphyxiating.
Topic 16. Hydrogen cyanide and cyanides.
Topic 17. Fluorine products.
Topic 18. Plastic materials. Thermal degradation of plastics
Topic 19. Organochlorine and organophosphorous pesticides. Nitrogen and carbamate pesticides
Topic 20. Indoor air quality
Topic 21. Carcinogenesis induced by chemical agents

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Tutorials	2,00
Theory	24,00
Seminar	2,00
Laboratory	15,00
Total hours	**43,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	10,00
Independent study and work	17,00
Preparation of lessons	29,00
Preparation for assessment activities	7,00
Resolution of case studies	4,00
Total hours	**67,00**

TEACHING METHODOLOGY

The development of the course is structured as follows:

Lectures, will include 2 hours a week in which the teacher provides students with an overview of the topic, and the information necessary to understand the contents of the subject. In these classes the students themselves are encouraged to conduct the search for accessory or dditional information, guiding the use of bibliographical sources needed. To monitor the class the student is recommended to review the material before the teacher leaves at the virtual classroom.

Specialized tutoring sessions in groups. It will organize in small groups of students in order to guide students and determine the unctioning of the course. It will be the ideal means for students to raise questions or issues they arise throughout the development agenda.

Practical sessions. These sessions will be conducted in small groups, and attendance is mandatory. Students are guided step by step through their work to ensure they acquire laboratory skills and complete the various practical sessions, following the virtual classroom manual. At the end of the practical sessions, students are required to submit a notebook.

Seminars / jobs. There will be a group work on a theme raised by the teacher in order to expose the rest of the class and generate further debate. Be given in writing prior to the show a script to the fellow students. The group is personally supervised by the teacher on a regular asis and directs the search of bibliographic sources and critical analysis of the data found in these sources. The teacher advised about the general approach of the work, so to build capacity for work, synthesis and research student.

During the activities, both theoretical and practical, examples of the applications of the contents of the subject in relation to the Sustainable Development Goals (SDG) will be indicated, as well as in the proposals of topics for the coordinated seminars. This is intended to provide students with knowledge, skills and motivation to understand and address these SDGs, while promoting reflection and criticism. Of the 17 Sustainable Development Goals, particular emphasis will be placed on the following goals :

1- Goal 1: End poverty in all its forms everywhere

2- Objective 2: Zero Hunger

3- Objective 3: Guarantee a healthy life and promote well-being for all at all ages.

4- Objective 13: Take urgent measures to combat climate change and its impacts

EVALUATION

To evaluate the **theoretical contents**, it will make an examination corresponding to the contents of the program. The note achieved will be the **70%** of the overall grade of the course.
Practical classes will be evaluated through attendance and completion of a written examination to be held in the same call that the review of the theoretical. The score in this evaluation represent **20%** of the final grade.

The preparation and presentation of **seminars** represent **10%** of the final grade. It will evaluate the content, structure and expression of written work and the capacity of synthesis and clarity in oral presentation. Attendance of seminars is compulsory.

Those students who fail the course in the first call, they keep the note for the convening of seminars for July.

In addition to the assessment of learning the teacher directly assess the student's attitude and participation in both theoretical and practical.

Evidence of copying or plagiarism in any of the assessable tasks will result in failure to pass the subject and in appropriate disciplinary action being taken. Please note that, in accordance with article 13. d) of the Statute of the University Student (RD 1791/2010, of 30 December), it is the duty of students to refrain from using or participating in dishonest means in assessment tests, assignments or university official documents.

In the event of fraudulent practices, the "**Action Protocol for fraudulent practices at the University of Valencia**" will be applied (ACGUV 123/2020):

https://www.uv.es/sgeneral/Protocols/C83sp.pdf

REFERENCES

- Ballantyne B., Marrs T.C., Syversen T. General and Applied Toxicology. Third Edition. Volume 1. Ed. A John Wiley and Sons, Ltd, Publication (2009) Bataller Sifre R Toxicología Clínica. Universitat de Valencia. Valencia (2004). Casarett & Doulls. Toxicology. The basic science of poisons. Ed. Curtis D. Klaasen. Mc Graw Hill Medical. Seventh Edition (2008) Falagán Rojo JM Higiene Industrial: Manual Práctico Ed. Fundación Luis Fernández Velasco (2008). Gil Hernández, F. Tratado de medicina del trabajo. Elsevier. Tercera edición. (2018) Laborda R. Evaluación de la exposición a agentes químicos en el trabajo. Manual Práctico. Ediciones Bérnia. Valencia (2001). Sanz Gallén P, Nogué Xarau S. Atlas de toxicología clínica y laboral. Mutua Universal. Barcelona (2001).

- http://busca-tox.com Portal de búsqueda de información toxicológica. http://www.aetox.es. Asociación Española de Toxicología. http://www.insht.es/portal/site/Insht/ Instituto Nacional de Seguridad e Higiene del trabajo http://www.lmee-svmt. org/panel/uploads/110823_TOXICOLOGIA_LABORAL.pdf