

## 25256 - Toxicology and public health

### Syllabus Information

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**Academic year:** 2023/24

**Subject:** 25256 - Toxicology and public health

**Faculty / School:** 201 - Escuela Politécnica Superior

**Degree:** 571 - Degree in Environmental Sciences

**ECTS:** 6.0

**Year:** 3

**Semester:** First Four-month period

**Subject type:** Compulsory

**Module:**

### 1. General information

Objectives of the subject:

It is intended that the student learns to know and analyse the possible causes and environmental factors that act on human health and their effects, as well as the means for their evaluation and forms of action within the environmental sciences aimed at improving individual and community health.

Special attention will be paid to the Sustainable Development Goals (SDGs) of the 2030 Agenda, related to the subject directly or indirectly, and to certain specific targets. Specifically:

Goal 3: Health and wellness. Ensure healthy lives and promote well-being for all at all ages (Objective 3.9).

Goal 6: Water and sanitation. Ensure availability and sustainable management of water and sanitation for all (Objective 6.3).

### 2. Learning results

1. Explain the fundamentals and the most important aspects of environmental toxicology applied to the prediction of the impact of toxicants on environmental pollution and on human health.
2. Design toxicity tests and be able to solve problems of toxicokinetic, risk assessment, exposure assessment, dose-response relationship and toxicological risk characterization.
3. Define the fundamentals and basic concepts of Public Health and, within this, of the Environmental Health.
4. Differentiate the main interactions between the environment and human health and the main risk factors for human health present in a given environment. 7. Define the fundamentals and basic concepts of epidemiology and differentiate the types of epidemiological studies used in the field of environmental epidemiology.
6. Solve problems of calculation and interpretation of the different epidemiological parameters, both descriptive and analytical: incidence, prevalence, relative prevalence ratio, relative risk, attributable risk, odds ratio, etiological risk fraction.
9. Locate and manage Health Information Systems and health indicator systems.  
Be able to define and calculate health indicators.
8. Locate scientific evidence in bibliographic databases on the Internet in the field of environmental health and be able to read and critically analyse.
9. Be able to present and argue orally and in writing the fundamentals, material and method, results and conclusions of practical work and bibliographic searches.

All of these learning results are part of SDGs 3 (health and well-being) and 6 (water and sanitation). With the achievement of these, students will have acquired the basic theoretical and practical knowledge necessary to promote sustainable development in relation to environmental toxicology and its consequences on pollution and human health.

### 3. Syllabus

1. Principles of Toxicology.
2. Toxicokinetics.
3. Toxics and cancer.
4. Toxicological risk assessment. Hazard identification.
5. Exposure assessment. Dose-response relationship.
6. Risk characterization.
7. Environmental pollutants and effects on human health.
8. Health and its determinants. Environment and health.
9. European Environment and Health Strategy.

10. Public Health.
11. Health demographics.
12. Introduction to epidemiology.
13. Epidemiological research. Observational and experimental studies. Causation.
14. Systematic reviews and meta-analyses.
15. Applications of environmental epidemiology.
16. Human environment and health.
- 17- Food safety and environmental issues.
18. Noise and physical contaminants.

#### **4. Academic activities**

Lecture, whose purpose is the transmission of knowledge and logical foundations of the subject

Practical exercises, which consist of the application of theoretical concepts in real situations (problem solving), critical reading of scientific articles and review of exercises, assignments and/or cases

Intermediate training in information skills: training activity at an intermediate level (specialized databases, bibliographic managers, etc.). Face-to-face theoretical and practical sessions , of 2 hours of duration. Within the framework of the Training Plan in Information Skills developed by the PS library in the centre's degrees (basic(1st), intermediate (2nd and 3rd) and advanced (4th) levels ).

#### **5. Assessment system**

The student may opt for continuous evaluation or final (or global) evaluation.

Continuous assessment

Designed for those students who attend class regularly and choose to make a continuous monitoring of the subject throughout the semester. When the student opts for continuous evaluation, they commits to:

- Submit assignments on time
- Attend all face-to-face sessions (at least 80% of practices)
- Obtain at least 50% of the maximum weighting given for both parts (it will be possible to compensate the obtaining of at least 40% in one of them if the weighted average exceeds 50%)

Type of tests:

Part A (70%). Theoretical-practical written exam that may include multiple-choice, short-answer questions and another test of exercises or cases.

Part B (30%). Tests with individual/group work on review of documents and/or scientific publications on environmental health and/or epidemiological study design in the field of environmental health.

Global assessment

For the student who does not opt for continuous evaluation or who does not pass the subject by this procedure

The detailed definition of the evaluation system will be explained in the presentation of the course subject

The success rate of the subject in the last three years is 100.00%. 89,66% and 96,15%.