



# SYSTEMATIC TOXICOLOGY

BIO/14 - 8 CFU - 2° Semester

## Teaching Staff

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## LEARNING OBJECTIVES

To provide relevant information to the knowledge of the toxic effects of substances of considerable environmental importance and their impact on organs and systems

## COURSE STRUCTURE

Traditional lecture. Should teaching be carried out in mixed mode or remotely, it may be necessary to introduce changes with respect to previous statements, in line with the programme planned and outlined in the syllabus.

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## DETAILED COURSE CONTENT

### *1° module: Risk assessment and toxicity*

Biomonitoring of populations exposed to environmental xenobiotics. Bioindicators and biomarkers as sensors of biological response. Biotic indices.

Mechanisms of toxicity: genotoxicity, embryotoxicity, carcinogenesis, cell death and apoptosis.

### *2° module: Food toxicology*

The food chain and its key role in the transfer of xenobiotics from the environment to living organisms.

- Bacterial toxins
- Animal and vegetable toxins; mycotoxins

- Nitrosamines and nitrous compounds
- Food additives
- Toxicity from veterinary drugs residues

3° module: **Toxic substances of considerable environmental relevance**

- Organochlorine, organophosphates and pyrethroids insecticides. Herbicides. Fungicides and rodenticides. Exposure, mechanism, toxic effects.
- Solvents: benzene, chlorinated aliphatic hydrocarbons, ethanol, methanol, glycols. Exposure, mechanism and toxic effects, general and specific
- Structure and toxicity of solid materials and biomaterials. Pathogenicity of fibers and particles: silica, asbestos
- Metals: arsenic, cadmium, chromium, lead, mercury, nickel, iron, manganese. Exposure, mechanism, toxic effects.
- Substances inducing hemoglobin alteration: carbon monoxide, cyanide, xenobiotics in general. Exposure, mechanism, toxic effects.
- Toxicity of household substances
- Antidotes

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## **TEXTBOOK INFORMATION**

1) Galli, Corsini, Marinovich, Tossicologia - Piccin

2) Hodgson, Tossicologia- Edises

3) Casarett & Doull's: Tossicologia EMSI

Texts for insights

4) Paoletti, Nicosia, Clementi, Fumagalli: Ecotossicologia UTET

5) Paoletti, Nicosia, Clementi, Fumagalli: Tossicologia molecolare e cellulare UTET

6) Paoletti, Nicosia, Clementi, Fumagalli: Tossicologia degli alimenti UTET

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