UCLouvain

lbrte2201

2026

Human and environmental toxicology

4.00 credits	30.0 h + 7.5 h	Q1

Teacher(s)	Debier Cathy ;
Language :	English > French-friendly
Place of the course	Louvain-la-Neuve
Prerequisites	Basics of chemistry, biochemistry and physiology
Main themes	Historical Overview, basic concepts in toxicology, assessment methods - Metabolism of xenobiotics : absorption by inhalation, ingestion or dermal; distribution; biotransformation (phase I and II reactions) and excretion – Environmental and food contamination as well as toxicity of major pollutants : legacy and emerging persistent organic pollutants (PCBs, DDT, PBDEs, dioxins, PFAs, etc.), heavy metals, pesticides, plastics and microplastics – Endocrine disruptors – pollutant transport and monitoring - Risk assessment in ecotoxicology
Learning outcomes	**At the end of this learning unit, the student is able to :** a. Contribution of the activity to the referential of the programme (LO) 1.1, 1.2, 2.2, 2.5, 6.1, 6.2, 6.4, 7.1, 7.3, 7.4, 8.1, 8.4, 8.5, 8.6 b. Specific formulation of the learning outcome of this activity. At the end of this course, the student: - knows and understands the basic principles of toxicology (dose, exposure, hazard, danger, indicator, biomarker) ; - is able to describe the epidemiological and experimental methods used to assess the toxicity of chemicals ; - knows the main routes of absorption, metabolism and elimination of toxic substances ; 1 - is able to compare the toxicity of major pollutants to which humans may be exposed according to their lifestyle (heavy metals, legacy and emerging persistent organic pollutants, pesticides, plastic-associated compounds) - knows and understands the modes of contamination of the environment; - is able to describe the technical monitoring of pollutants in the environment - knows and understands the impact of pollutants on individuals (including humans) , communities and ecosystems - masters the techniques of " risk assessment " in ecotoxicology; - understands the specificities related to the toxicity of endocrine disruptors and is able to make comparisons with other toxic substances; - demonstrates critical thinking towards the impact of human activities on environmental contamination and ultimately on human health.
Evaluation methods	Written exam during the session (questions on theory and exercices)
Teaching methods	Coordinated package of lectures with audio-visual aids (slides and videos) - concrete examples Exercices on risk assessment in ecotoxicology and seminars given by invited experts Most of the activity requires the presence of the students.
Content	The course is divided in different chapters : 1 - Principles of Toxicology - Introduction to toxicology - Characteristics of exposure - Interactions of chemicals - Dose-response - Variation in toxic responses 2 – Absorption, Distribution, biotransformation and Excretion of toxicants 3 - Persistent organic pollutants 4 – Heavy metals 5 - Pesticides 6 - Plastics and microplastics 7 - Endocrine disruptors

	8 - Environmental Toxicology - Transport and fate of toxicants in the environment - Environmental monitoring - Environmental risk assessment The practical section includes seminars given by experts and exercises on risk assessment in ecotoxicology
Inline resources	Moodle
Bibliography	Slides used by the professors are available on Moodle
Other infos	Course given in English.
Faculty or entity in charge	AGRO

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Biochemistry and Molecular and Cell Biology	BBMC2M	4		
Master [120] in Biomedical Engineering	GBIO2M	4		
Master [120] in Environmental Bioengineering	BIRE2M	4		
Interdisciplinary Advanced Master in Science and Management of the Environment and Sustainable Development	ENVI2MC	4		
Master [120] in Chemistry and Bioindustries	BIRC2M	4		
Master [120] in Agricultural Bioengineering	BIRA2M	4		