



UNIVERSITY OF NICOSIA

ΠΑΝΕΠΙΣΤΗΜΙΟ ΛΕΥΚΩΣΙΑΣ

Course Code	Course Title	Credits (ECTS)
PHAR-430	Toxicology/ Τοξικολογία	5
Department	Semester	Prerequisites
Life & Health Sciences	Spring	PHAR365, 366
Type of Course	Field	Language of Instruction
Required	Pharmacy	Greek/English
Level of Course	Year of Study	Lecturer
1 st Cycle	4 th year	Zacharia Lefteris
Mode of Delivery	Work Placement	Co-requisites
face-to-face	N/A	None

Objectives of the Course:

The objectives of the course are to study the adverse health effects of exposure to drugs (toxic levels) or substances of abuse. The course covers principles of toxicodynamics, toxicokinetics, biotransformation, diagnosis and treatment. Emphasis will be placed on toxic effects and mechanism(s) of action of the various drug classes, body system(s) affected, clinical manifestations of problems and the resulting adverse effects on human health and society. Relevant antidotes will also be covered. Methods of treatment and patient education will also be addressed. Laws controlling and governing the use of these drugs/substances and the agencies responsible for them will also be covered

Learning Outcomes:

After completion of the course students are expected to:

- critically evaluate the mechanisms of toxicity of a number of compounds at a molecular, cellular and systems level in terms of application to clinical practice
- characterize the clinical toxicology of drug overdose from drug abuse/misuse or accidental exposure and evaluate in terms of patient safety
- describe and/ analyse the procedures used in the pharmaceutical industry and health community for the evaluation of the safety of new drugs and medicines including the use of radiopharmaceuticals
- apply risk/benefit judgments to case reports on the safety of new drugs
- evaluate clinical testing procedures for compliance with Good Clinical Practice and other ethical standards
- demonstrate skill in accessing medical and scientific literature

Course Contents:

- I. Principles of Toxicology
 - A. Classification of Toxic Agents
 - B. Characteristics of Exposure
 - C. Spectrum of Undesired Effects

- D. Interaction of Chemicals
- E. Tolerance
- F. Dose Response
- II. Mechanisms of Toxicity
 - A. Delivery
 - B. Reaction
- III. Risk Assessment
 - A. Definitions
 - B. Risk Perception
 - C. Hazard Identification
 - D. Characterization of Risk
- IV. Disposition of Toxicants
 - A. Absorption, Distribution and Excretion of Toxicants
 - B. Biotransformations of Xenobiotics
 - C. Toxicokinetics
- V. Toxic Agents
 - A. Toxic Effects of Pesticides
 - B. Toxic Effects of Metals
 - C. Toxic Effects of Solvents and Vapors
 - D. Toxic Effects of Radiation and Radioactive Materials
 - E. Toxic Effects of Animal Toxins
 - F. Toxic Effects of Plants
- VI. Environmental Toxicology
 - A. Air-borne Toxicants
 - 1. Air-pollution in perspective
 - 2. Epidemiological Evidence of Health Effects from Air Pollution
 - B. Aquatic and Terrestrial Ecotoxicology
 - 1. Principles of Ecotoxicology
 - 2. Environmental Chemistry and Chemodynamics
 - 3. The Use of Biomarkers
 - 4. Aquatic Toxicology
 - 5. Terrestrial Toxicology
 - 6. Modeling
 - 7. Ecological Risk Assessment
 - 8. Good Laboratory Practice in Ecotoxicology Testing
- VII. Other Applications of Toxicology
 - A. Food Toxicology
 - B. Analytic/Forensic Toxicology
 - C. Clinical Toxicology
 - D. Occupational Toxicology
 - E. Regulatory Toxicology
- VIII. Non-organ - Directed Toxicity
 - A. Chemical Carcinogenesis
 - B. Genetic Toxicology
 - C. Developmental Toxicology
- IX. Organ Toxicity

Learning Activities and Teaching Methods:

Lectures, class discussion, assignments

Assessment Methods:

Final Examination, Course work

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Reichl F. X., Ritter	Illustrated hand book of toxicology/ Γενική τοξικολογία- Ουσίες, δράσεις, περιβάλλον	Thieme publishing group/ ΕΚΔΟΣΕΙΣ ΠΑΣΧΑΛΙΔΗΣ		
Νέου Π.	Κλινική Τοξικολογία & Θεραπευτική Αντιμετώπιση Δηλητηριάσεων	ΕΚΔΟΣΕΙΣ ΠΑΣΧΑΛΙΔΗΣ		

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
<u>J. B. Watkins III, C. Klaassen</u>	Casarett & Doull's Essentials of Toxicology	McGraw-Hill Professional 2 nd edition		
G.J. Mulder, L. Dencker	Pharmaceutical Toxicology	Pharmaceutical Press	2006	
Helmut Greim, Robert Snyder	Toxicology and Risk Assessment: A Comprehensive Introduction	Wiley e book		