



University of Nicosia, Cyprus

Course Code BIOL-371	Course Title Drug Action and Toxicology	ECTS Credits 8
Department Life and Health Sciences	Semester Spring	Prerequisites BIOL-251 Intr. to Microbiol. and Virology BIOL-321, -322 Biochemistry I, II
Type of Course Required	Field Pharmacology	Language of Instruction English
Level of Course 1 st Level	Year of Study 3 rd or 4 th	Lecturer Dr. Catherine Demoliou
Mode of Delivery Face to Face	Work Placement N/A	Co-requisites None

Objectives of the Course:

The course aims to teach the basic pharmacological principles and the general pharmacological concepts of drug action and toxicity in the framework of human biochemistry, physiology and pathophysiology. The main objectives of the course are to:

- Make students aware of the beneficial and deleterious effects of drugs and chemicals on the human body by emphasizing the biochemical basis of drug action.
- Present the methods of assessing drug action by problem solving of pharmacological data (pharmacodynamic and kinetic) and/or analyzing of pharmacological parameters.
- Demonstrate the differences in the action of major drug classes regarding body systems; make students aware of how the body handles drugs and toxic substances and discuss the effects of drug abuse on human health and society.
- Provide students with the opportunity to know about current advancements in drug development.

Learning Outcomes:

After completion of the course students are expected to be able to:

1. Apply pharmacological approaches to problem solving (calculate and compare drug action and activity parameters).
2. Discuss the molecular basis of the mechanisms of drug action, drug metabolism

- and drug toxicity and identify the major body organs affected.
3. Categorize the classes of drugs in terms of their chemistry and action on body systems.
 4. Identify the major drugs of abuse, and report on their adverse effects using specific examples.
 5. Explain about safety and risks associate with medicinal and alternative-medicine use and abuse.
 6. State the legal and ethical issues regarding drug regulation and uses as well as drug development.
 7. Participate effectively in group work; collect, report and discuss relevant literature research.

Course Contents:

1. General aspects of pharmacology: history of drug use and development.
2. Pharmacokinetics: absorption, distribution and elimination; drug toxicity.
3. Pharmacodynamics: mechanisms of drug action; specificity, effective concentration.
4. Principles of therapeutics; bioactivation; sex differences; age-dependence.
5. Pharmacological Aspects of the Central Nervous System.
6. Analgesics, anti inflammatory and antipyretics.
7. Immunizations and medications for immune system diseases.
8. Antihypertensive drugs.
9. Antimicrobial/antifungals/antivirals drugs.
10. Antineoplastics and chemotherapy.
11. Nutritional supplements and alternative medicines; drugs of abuse and misuse.
12. Medications and toxicity related to body and enzyme systems; metabolism of toxicants.
13. Effects of toxicants (pesticides); Carcinogenesis; Genetic toxicology.
14. Topics of current interest i.e. regulation of fertility; hormone replacement therapy.

Learning Activities and Teaching Methods:

Lectures, Self directed study of literature papers, discussions, problem solving

Assessment Methods:

Assignments, Tests and Mid-term Exam; Final Exam

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
John B. Watkins III, Curtis Klaassen	Casarett & Doull's Essentials of Toxicology	McGraw-Hill Professional	2 nd ed. 2010	ISBN-10: 0071622403 ISBN-13: 978-0071622400

Maria A. Hernandez, Appu Rathinavelu	Basic Pharmacology : Understanding Drug Actions and Reactions	CRC Press	2006	ISBN: 978-1-58716-160-5
--------------------------------------	---	-----------	------	-------------------------

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
George M. Brenner, Craig Stevens	Pharmacology, 3rd Edition With STUDENT CONSULT Online Access	Saunders;	3 rd ed., 2009)	ISBN-10: 1416066276 ISBN-13: 978-1416066279
J. Griffith Hardman, O.E. Limbird, A.G. Gilman	Goodman & Gilman's The Pharmacological Basis of Therapeutics	McGraw-Hill	2001, 10 th ed.	ISBN: 0071354697
Timbrell J.A.	Principles of Biochemical Toxicology	Informa Healthcare	4 th ed., 2008	ISBN-10:0849373026 ISBN-13:9780849373022