

Global Learning Semesters

Course Syllabus

Course: BIOL-290 Drug Action and Toxicology

Department: Health and Life Sciences

Host Institution: University of Nicosia, Nicosia, Cyprus



Course Summary		
Course Code	Course Title	Recommended Credit Hours
BIOL-290	Drug Action And Toxicology	3
Semester Offered	Contact Hours	Prerequisites
Please contact us	42-45	BIOL-260, BIOL-270, CHEM 150, CHEM-160
Department	Level of Course	Language of Instruction
Health and Life Sciences	Lower Division	English

Course Description

The course covers basic pharmacological principles and the general concepts of chemical-biological interactions involved in drug action and toxicity. The course integrates relevant knowledge from the basic biomedical sciences to explain aspects of drug mechanisms and of specific metabolizing and detoxifying enzyme systems in relevance to drug therapy. The therapeutic and adverse reactions of drugs are covered in the framework of human biochemistry, physiology and path physiology. The student at the end of the course will have a deeper understanding of mechanisms of drug action at the molecular level and of safety and risk associated with new drugs or drug interactions. The course format is 3h lectures per week and assigned literature

Prerequisites

BIOL-260, BIOL-270, CHEM 150, CHEM-160

Topic Areas

1. General aspects of pharmacology.
2. Pharmacokinetics: the dynamics of drug absorption, distribution and elimination.
3. Pharmacodynamics: mechanisms of drug action; specificity, concentration vs. effect.
4. Principles of therapeutics; bioactivation; sex differences; age-dependence.
5. Neurotransmission: agonist vs. antagonist; Anaesthetics, Hypnotic and sedative drugs.
6. Analgesics, anti inflammatory and antipyretics.
7. Immunizations and medications for immune system diseases.
8. Antimicrobial/antifungals/antivirals drugs.
9. Antineoplastics and chemotherapy.
10. Nutritional supplements and alternative medicines; drugs of abuse and misuse.
11. Medications and toxicity related to body and enzyme systems.
12. Metabolism of toxicants, (modification, activation, elimination, adaptation).
13. Effects of toxicants on electron transport and oxidative phosphorylation.
14. Effect of toxicants on nuclei acid and protein metabolism.
15. Carcinogenesis; Genetic toxicology.

Readings and Resources

Required Textbooks

1. Principles of Drug Action: The Basis of Pharmacology by William B. Pratt, Palmer Taylor Publisher: Churchill Livingstone; 3rd edition (May 1, 1990) ISBN: 0443086761.
2. Goodman & Gilman's The Pharmacological Basis of Therapeutics by Joel Griffith Hardman, Lee E. Limbird, Alfred G. Gilman Publisher: McGraw-Hill Professional; 10 edition (August 13, 2001) ISBN: 0071354697.
3. Casarett & Doull's Essentials of Toxicology by Curtis D. Klaassen, John B. Watkins Publisher: McGraw-Hill Professional; 1 edition (June 26, 2003) ISBN: 0071389148.

Recommended Reading

1. Principles of Pharmacology: The Pathophysiologic Basis of Drug Therapy by David E. Golan, Armen H. Tashjian, Ehrin Armstrong, Joshua M. Galanter, April Wang Armstrong, Ramy A. Arnaout, Harris S. Rose Publisher: Lippincott Williams & Wilkins (April 1, 2004) ISBN: 0781746787.
2. Lippincott's Illustrated Reviews : Pharmacology : Special Millennium Update by Mary Julia Mycek, Richard A. Harvey, Pamela C. Champe Publisher: Lippincott Williams & Wilkins; 2 edition (January 1, 2000) ISBN: 0781724139.
3. Pharmacology: Drug Actions and Reactions, Sixth Edition by Ruth R. Levine (Editor), Carol T. Walsh (Editor), Rochelle D. Schwartz-Bloom, R.R. Levine, C.T. Walsh Publisher: CRC Press-Parthenon Publishers; 6th edition (April 15, 2000) ISBN: 185070497X.
4. Foye's Principles of Medicinal Chemistry by David A. Williams, Thomas L. Lemke, William O. Foye Publisher: Lippincott Williams & Wilkins; 5th edition (February 15, 2002) ISBN: 0683307371.
5. Human Pharmacology: Molecular to Clinical by Theodore M. Brody, Joseph, Md. Larner, Kenneth P. Minneman Publisher: C.V. Mosby; 3rd edition (January 1, 1998) ISBN: 08151245.
6. Introduction to Toxicology by John A. Timbr Publisher: CRC Press; 3rd edition (December 14, 2001) ISBN: 0415247632.
7. Enzyme Systems that Metabolise Drugs and Other Xenobiotics (Current Toxicology) by Costas Ioannides Publisher: John Wiley & Sons (January 11, 2002) ISBN: 0471894664.
8. The Genetic Basis of Alcohol and Drug Actions by John C., Jr. Crabbe, R. Adron Harris Publisher: Plenum Publishing Corporation (December 1, 1991) ISBN: 0306438682.
9. Pharmacotherapy: A Pathophysiologic Approach by Joseph T. DiPiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke, Barbara G. Wells, L. Michael Posey Publisher: McGraw-Hill/Appleton & Lange; 5 edition (April 18, 2002) ISBN: 0071363610.
10. Principles of Biochemical Toxicology by John Timbrell Publisher: CRC Press; 3rd Updtd edition (November 1, 1999) ISBN: 0748407367.
11. Introduction to Biochemical Toxicology, 3rd Edition by Ernest Hodgson, Robert C. Smart Publisher: Wiley-Interscience; 3 edition (January 26, 2001) ISBN: 0471333344.
12. A Textbook of Modern Toxicology by Ernest Hodgson (Editor) Publisher: Wiley-Interscience; 3 edition (February 13, 2004) ISBN: 047126508X.
13. Basic & Clinical Pharmacology by Bertram G. Katzung Publisher: McGraw-Hill/Appleton & Lange; 8th edition (September 21, 2000) ISBN: 0838505988.
14. Pharmacology by H. P. Rang, M. M. Dale, J. M. Ritter, P. K. Moore, Peter Lamb Publisher: Churchill Livingstone; 5th edition (August 1, 2003) ISBN: 0443071454.
15. Basic Pharmacology by Robert Vlosky, Robert, Vlosky, Melanie, Medina, Joseph, Pleskow, Bruce Shrewsbury, Tammy Newman, Dennis Hogan Publisher: Morton Pub Co; 1 edition (March, 2000) ISBN: 0895825066.
16. A Primer of Drug Action, Tenth Edition (Primer of Drug Action: A Concise, Nontechnical Guide to the Actions, Uses, & Side Effects of) by Robert M. Julien Publisher: Worth Publishers Inc; 10th Ed edition (October, 2004) ISBN: 0716706156.