



University of Nicosia, Cyprus

Course Code BIOL-472	Course Title Special Topics III: Drug Discovery Research	ECTS 4
Department Life and Health Sciences	Semester Spring/Fall	Prerequisites BIOL-371, Drug Action and Toxicology
Type of Course Elective	Field Biology, Medicine	Language of Instruction English
Level of Course 1 st Cycle	Year of Study 4 th	Lecturer Dr. Catherine Demoliou
Mode of Delivery face-to-face	Work Placement N/A	Co-requisites None

Objectives of the Course:

To provide an introduction to the latest techniques and methods used in the development of new therapeutic drugs. The main objectives of this course are to:

- To make students aware of the potential of biotechnology, proteomics, genomics and epigenetics in drug design and development.
- To cover modern methods and strategies followed for drug target identification.
- To discuss the principle steps followed in optimizing lead molecules with therapeutic potential.

Learning Outcomes:

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

1. Describe the basic sources of information used in drug discovery.
2. Identify and explain the strategies followed in designing new drugs.
3. Differentiate the biotechnology and the various –omics fields data input utilized in drug design.
4. Explain the rationale of using new approaches in screening new drugs.
5. Be able to describe the meaning of personalized medicine and the future direction of drug development.

Course Contents:

1. Drug discovery introduction.
2. Proteomics
3. Pharmacogenomics for individualized pharmacotherapy
4. Cell model based pharmacogenomics and pharmacotherapy
5. Pharmacogenetics in drug discovery and therapeutics

6. Biological Product Development Advances: Molecular engineering,
7. Biological Product Development Advances: Drug delivery.
8. Biological Product Development Advances: Combinatorial chemistry.
9. Approved Biologicals: Hormone, Enzyme, Growth Factor, Mab, Interferons, etc.
10. Current therapeutic strategies in cardiovascular diseases
11. Current therapeutic strategies in cancer treatment and AIDS
12. Bioethics and Biotechnology (access to databases; genetic id).

Learning Activities and Teaching Methods:

Lectures, Case studies discussions, Cooperative Learning

Assessment Methods:

Assignments/Presentations, Mid-term Exam; Final Exam

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
1. Ziwei Huang	Drug Discovery Research. New Frontiers in the Post-Genomic Era.	John Wiley & Sons Inc.	2007.	ISBN – 978-0-47167200
2. Shayne Cox Gad	Drug Discovery Handbook	Wiley	2005	ISBN-: 0471213845

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
1. A. Hillisch and R. Hilgenfeld	Modern methods of drug discovery	Birkhäuser Verlag,	2003	ISBN- 376436081X
2. Thomas J. Dougherty, Steven J. Projan	Microbial genomics and drug discovery	Marcel Dekker,	2003	ISBN: 0824740416
3. D. Figeys	Industrial proteomics: applications for biotechnology and pharmaceuticals	Wiley	2005	ISBN: 0471457140
4. Atkinson AJ Jr et al	Principles of Clinical Pharmacology	Academic Press	2007, 2 nd ed.	ISBN- 0123694175