



University of Nicosia, Cyprus

Course Code CHEM-104	Course Title Introduction to Organic & Biological Chemistry	ECTS 6
Department Intercollege	Semester Spring or Fall	Prerequisites None
Type of Course Required	Field Foundation of Sports Science	Language of Instruction Greek
Level of Course Undergraduate	Year of Study 1 st	Lecturer Dr Stylianos Marios
Mode of Delivery Face-to-face	Work Placement N/A	Co-Requisites None
Recommended Optional Programme Components: N/A		

Objectives of the Course:

The purpose of this course is to give students an understanding of the basic concepts and principles of organic molecules and chemistry especially as they apply to biological molecules and systems and to introduce to the students the biochemical principles of cell and body functions. The student will also learn about the biochemical compounds and test relevant to human body biochemistry in health and disease. The course format is 3 h lectures and 1 h laboratory tutorial session per week.

Learning Outcomes:

At the end of the course the student will be able to:

1. Know the structure, names and chemical properties of compounds composed primarily of carbon and hydrogen (and to a lesser extent oxygen, nitrogen, sulfur and phosphorous)
2. Know the chemical and physical properties of biological compounds including proteins, lipids and carbohydrates
3. Know the metabolism and metabolic products of biological compounds
4. Understand the basics of acids/bases and electrolytes
5. Understand the chemistry of body fluids
6. Become familiar with biochemical diagnostic results of clinical measurements

Course Contents:

1. Key organic molecules and biochemical reactions
2. Physical-chemical interactions in biological macromolecules
3. Proteins, glycoproteins and nucleic acids; biochemical properties
4. Methods for separation and detection of biological macromolecules (centrifugation, chromatography, electrophoresis, spectroscopy).
5. The biochemistry of the Acid/Base homeostasis in the human body
6. The chemistry of biosynthetic pathways and the regulation of key enzymes
7. The Generation of Biochemical Energy; the biochemical basis of human

nutrition

(hormone regulated caloric homeostasis)

8. Chemical Messengers: Hormones, Neurotransmitters, and Drugs
9. The biochemistry of complex lipids
10. Liver, amino acid metabolism and special functions
11. Liver and kidney, the biochemistry of nitrogen metabolism
12. The biochemistry of blood coagulation/fibrinolysis
13. Bone and cardiac muscle biochemistry
14. Cell biochemistry-mutation types and mechanisms
15. Nuclear Chemistry

Learning Activities and Teaching Methods:

Lectures and lab activities

Assessment Methods:

Midterm examination , Final examination , Course work/practices,
Attendance/participation

Required Textbooks:

Authors	Title	Publisher	Year	ISBN
John McMurry, Mary E. Castellion, Mary E Castellion	Fundamentals of General, Organic, and Biological Chemistry	Prentice Hall; 4 th edition	2002	013041842

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Kathleen Deska Pagana, Timothy James Pagana	Mosby's Manual of Diagnostic and Laboratory Tests	Mosby; 2 nd edition	2002	032301609X
Karen Timberlake	Chemistry: An Introduction to General, Organic and Biological Chemistry, MEDIA UPDATE PACKAGE (7 th Edition)	Benjamin/Cum mings; Book and CD-ROM edition	2000	0805335684