Nature Care College

Biochemistry

DESCRIPTION	Time to explore the microcosm in detail! With an emphasis on organic chemistry, this module describes the structure and interactions of substances as they relate to biochemical processes within the human body.
DURATION	72 hours
LEARNING OUTCOMES	By the conclusion of the module, students should be able to: 1. Identify structural components of chemical compounds relevant to biochemical reactions. 2. Identify the organic compounds involved in biochemical reactions. 3. Describe cellular reproduction in the human body. 4. Explain the effect of diet on metabolism. 5. Describe chemical and biochemical reactions in metabolism. 6. Identify the toxic effects of Chemical Compounds. 7. Outline the methods of biochemical diagnosis. 8. Identify the base of chemotherapy.
TEACHING METHOD	Lectures, tutorials.
ASSESSMENT	Exam – Mid Term 50% Exam – End of Term 50% Applies to each term (x3) **Pass mark 60%** **Both components must be passed at 60% in order to pass this subject satisfactorily.**
ATTENDANCE	80% minimum.
PRE-REQUISITES	Chemistry
CO-REQUISITES	Nil.
MATERIALS REQUIRED	Notepad, Pen.
TEXTBOOKS	**Compulsory:** Baynes J & Dominiczak M. 2004. *Medical Biochemistry*. 2nd Ed. Mosby

Recommended Reading / References:

Bettelheim & March. 2003. *Introduction to General, Organic & Biochemistry*. Brooks Cote, UK

Gilham B, Papachristodoulou DK, Thomas JH, 2001. *Wills Biochemical Basis of Medicine*

Timberlake, K. 2003. *Chemistry*. 8th Edition. Harper & Row, UK.

McKee T & McKee J, 3rd edition. *Biochemistry, The Molecular Basis of Life*, McGraw Hill 2003

Devlin, 2005. *The Textbook of Biochemistry with Clinical Correlations.* Wiley Publishers, USA.

3rd ed. Butterworths Heinemann, London, United Kingdom.

Koolman J, Rohm K, 1996. *Colour Atlas of Biochemistry.* Thieme, Stuttgart.

Lehninger A, 2004. *Principles of Biochemistry.* 4th Edition. Worth, USA.

Mathews C, Van Holde K, 1999. *Biochemistry.* International Edition. Benjamin/ Cummings, USA.

Rose S, 2002. *The Chemistry of Life.* 5th Edition. Penguin, USA.

Stryer L, 2002. *Biochemistry*. 2nd ed. Freeman, USA.

New Scientist Journal

WEEK-BY-WEEK OUTLINE

TERM 1

WEEK 1	Cells, fine structure, replication, methods of investigation. Review of relevant chemistry.
WEEK 2-3	Carbohydrates in detail, glycoside linkages.
WEEK 4-5	Lipids in detail, classification and function.
WEEK 6	Mid-term Exam
WEEK 7	Amino acids, proteins, classification, structure and function.
WEEK 8	Enzymes - mechanisms, functions, co-enzymes, classes.
WEEK 9	DNA Replication
WEEK 10	Protein Synthesis
WEEK 11	Micro-organisms
WEEK 12	***EXAM***

TERM 2

WEEK 1-2	Hormones
WEEK 3-4	Introduction to metabolism including Krebs Cycle and electron transport chain
WEEK 5	Carbohydrate metabolism
WEEK 6	Mid-term exam
WEEK 7	Lipid metabolism
WEEK 8	Protein metabolism
WEEK 9	Vitamins and Ions in the body
WEEK 10	Starvation and dieting
WEEK 11	Biochemistry of free radical damage and antioxidants
WEEK 12	**EXAM**

TERM 3

WEEK 1	Erythropoiesis and erythrocyte metabolism
WEEK 2	Biology and biochemistry of blood clotting
WEEK 3	Kidney biochemistry
WEEK 4	Liver biochemistry
WEEK 5	Mid-term Exam And Neurotransmitters.
WEEK 6	Brain and CNS biochemistry.
WEEK 7	Biochemistry of muscle action
WEEK 8	Obesity
WEEK 9	Toxicology & Xenobiochemistry.
WEEK 10	Chemical Carcinogenesis.
WEEK 11	Biochemistry diagnosis - recent advances. Mini review
WEEK 12	**EXAM**

Please be respectful of your fellow students and arrive on time for classes. Please ensure all mobile phones are turned off prior to the commencement of class.