

BCM 1342: BIOCHEMISTRY OF BIOMOLECULES (BIOCHEMISTRY II)

Pre-requisites: None

Credit Units: 4.5

2.12.2 Purpose of the course;

To teach the student the nature of biological forms, the mechanisms of life and the mechanisms of life processes in terms of chemistry and biology.

2.12.3 Expected Learning Outcomes of the Course;

At the end of the course, the student should be able to:

1. List and Explain the nature and chemistry of bio-molecules and macromolecules,
2. List and Explain the biochemical factors that commonly cause disease,
3. Explain the bases of biochemical disorders,
4. Perform some biochemical analyses and
5. To use this knowledge in the diagnosis of diseases

2.12.4 Course Content

The structure and Function of Biomolecules: Simple building blocks, biomolecules, macromolecules, water, acids, bases. Protein chemistry; Enzymes; Nucleic acid chemistry; Hormone; Biological oxidation; Saccharometabolism; Lipid metabolism; Amino acid metabolism; Nucleic acid metabolism and protein biosynthesis; Regulations of substance metabolism and gene expression. The structure and Function of Lipids, carbohydrates, Hormones. Vitamins; Definition, classification, synthesis, chemistry. **Practicals:** Tests for and Analysis of biochemical compounds.

2.12.5 Mode of Delivery;

Lectures, power point presentations, and class discussions. These will take a participatory approach.

Laboratory learning and Experiments: The lecturer, together with the laboratory technical staff, will take the students through practical sessions, beginning with **demonstrations**. The students will thereafter be expected to use pre formulated laboratory manuals to carry out various practical exercises then write out their findings in their laboratory workbooks. **Video demonstrations and/or CD-Roms** on Medical Biochemistry when available, after the relevant topic has been covered. **Assignment criteria:** Students will be given several individual or group research assignments on topics relevant to the course. These could include lectures, discovery learning, problem-based learning, experimental learning, group-based learning, independent studies and e-learning.

2.12.6 Instructional Materials and/or Equipment;

Lecture notes or power points for presentation; Tutorials; Video demonstrations; CD-Roms; Dissection kits; Microscopes; Text books; Practical Manuals, biochemical reagents; glassware; biochemical analytical equipment; biochemical charts.

2.12.7 Course Assessment;

Distribution of Marks

Attendance & Participation	5%
Continuous Assessment Tests /Quizzes	5%
Term Paper	10%
Oral examination	10%
Mid-Quarter Exam	15%
Final Exam	25%
Laboratory exercises	30%
Total	100%

Grading

90 - 100	A
87 - 89	A ⁻
84 - 86	B ⁺
80 - 83	B
77 - 79	B ⁻
74 - 76	C ⁺
70 - 73	C
67 - 69	C ⁻
64 - 66	D ⁺
62 - 63	D
60 - 61	D ⁻
00 - 59	F

2.12.8 Core Reading Materials for the Course

Nelson, D. L. & Cox, M. M. (2012). Lehninger Principles of Biochemistry. 6th Edition. W. H. Freeman & Co., New York

Ninfa, A. J., Ballou, D. P., Benore, M. (2009). Fundamental Laboratory Approaches for Biochemistry and Biotechnology. 2nd Edition. Wiley, Hoboken, NJ, USA

[Reginald H. Garrett](#), R. H., [Grisham](#), C. M. (2013). Biochemistry. 5th Edition. Books /Cole Cengage Learning, Belmont, CA

2.12.9 Recommended Reference Materials;

Cammack, R., Attwood, T., Campbell, P., Parish, H., Smith, A., Vella, F., and Stirling, J. (Eds). (2006). Oxford Dictionary of Biochemistry and Molecular Biology. 3rd Edition. Oxford University Press, Oxford

Chatterjea, M. N., Rana, S. (2012). Textbook of medical Biochemistry. 8th Edition. Jaypee Brothers Medical Publishers (P) Ltd., New Delhi

Jeremy, M. B., John L. T. and Lubert, S. (2002). Biochemistry. 5th Edition. W. H. Freeman & Co., New York

[Meisenberg](#), G., [Simmons](#), W. H. (2012). Principles of Medical Biochemistry. 3rd Edition. Saunders, Elsevier, Philadelphia

Robert, K. M., Daryl K. G., Mayes, P. A., Rodwell, V. W. (2009). Harper's Illustrated Biochemistry. 29th Edition. Lange Medical Books, New York

