

TEMPLATE FOR COURSE SPECIFICATION

University: Khyber Medical University

Faculty: Muhammad Jaseem Khan / Shaikh Atif Mehmood

Course Specification

Programme(s) on which the course is given: **BS Paramedics**
Major or minor element of the programmes: **Minor**
Department offering the programme: **Institute of Paramedical Sciences**
Department offering the course: **Institute of Paramedical Sciences**
Academic year/Level: **Fall Semester, 2012**
Date of specification approval:

A. Basic information

Title: Biochemistry Code:
Credit Hours: 3+1 Lectures: 54
Practical: 36 Total: 90

B. Professional Information

1. Overall aims of course

- i. To understand the chemical composition of macro and micro molecules of the cell
- ii. To understand different biochemical reactions in cell
- iii. To utilize their knowledge scientifically

2. Intended learning outcomes of course (ILOs)

- a. Knowledge and understanding:
 - i. Basic concepts of cell
 - ii. Basic concepts of Carbohydrates, proteins, lipids, vitamins, enzymes, hormones and minerals.
 - iii. Biochemical processes of absorption and digestion

- b. Intellectual skills
 - i. Communication skills
 - ii. Expression skills
 - iii. Teaching skills

- c. Professional and Practical Skills
 - i. Analyze different biochemical parameters
 - ii. Trouble shoot common problems in chemistry analyzer
 - iii. Prepare solutions of different concentrations

- d. General and transferable skills
 - i. Diagnosis skills
 - ii. Good laboratory practices
 - iii. Scientific base approach

3. Contents:

Topic	No. of Hours	Lecture	Practical
Biochemical composition and functions of the cell	1	1	0
Cell membranes and their chemical composition	1	1	0
Importance of lipids and proteins in cell membranes	1	1	0
Chemistry of signals and receptors	1	1	0
Membrane transport including active transport, passive transport, simple and facilitated diffusion	1	1	0
Structure & Functions of Carbohydrates	6	2	4
Structure & Functions of Proteins	6	2	4
Structure & Functions of Lipids	10	2	8
Vitamins and their different types	3	1	2
Classification of vitamins, their chemical structure & biochemical function	4	2	2
Sodium, potassium, chloride, calcium, phosphorus, magnesium, sulfur, iodine, fluoride	8	4	4
Composition, function and daily secretion of saliva, gastric juice, gastric acid(HCL), pancreatic juice, bile, and intestinal secretion	7	3	4
Digestion of proteins, carbohydrates, nucleic acids and lipids	2	2	0
Absorption of vitamins and minerals Sodium, potassium, chloride, calcium, phosphorus, magnesium, sulfur, iodine, fluoride	2	2	0
Endergonic and exergonic reactions, their coupling through ATP	1	1	0
Biologic Oxidation and reduction	2	2	0
potential, enzymes and coenzymes of biologic oxidation and reduction	1	1	0

Respiratory chain and oxidative phosphorylation, components of respiratory chain, electron carriers	3	3	0
ATP synthesis coupled with electron flow, phosphorylation of ADP coupled to electron transfer	4	4	0
Ionization of water, weak acids and bases.	1	1	0
pH and p ^H scale p ^K values	3	1	2
Body buffers and their mechanism of action	3	1	2
Acid base regulation in human body	1	1	0
Biochemical mechanisms for control of water and electrolyte balance	1	1	0
Types of particles in solution	5	1	4
Importance of selectively permeable membranes, osmosis and osmotic pressure, surface tension, viscosity	2	2	0
Structure & composition, Secretion, Mechanism of action of hormones	10	10	0

4. Teaching and Learning Methods:

- a. Lectures (PPT/PDF)
- b. Presentations/Quizzes
- c. Assignments
- d. Practicals

5. Student Assessment Methods

- a. Presentations to access student communication skills.
- b. Assignments to access student writing and intellectual skills.
- c. Mid-term exam to access student knowledge and understanding.
- d. Final term exam to access learning outcomes.

Assessment Schedule

Assessment 1	Class test	Week	2 nd
Assessment 2	Class test	Week	5 th
Assessment 3	Class test	Week	8 th
Assessment 4	Mid-term	Week	9 th
Assessment 5	Assignment	Week	11 th
Assessment 6	Class test	Week	14 th
Assessment 7	Final term	Week	20 th

Weighting of assessments

Mid-term examination	30 %
Final-term examination	50 %
Class test/Assignment/Presentation	20 %
Total	100 %

6. Lists of references

- a. Course notes: Class lectures (PPT)
- b. Essential books (text books)
 - i. Essentials of Medical Biochemistry Vol. I and II
By Mushtaq Ahmad
 - ii. Instant Biochemistry By Faiq Ahmed
- c. Recommended books
 - i. Harpers Illustrated Biochemistry
 - ii. Biochemistry By Lubert Stryer
 - iii. Lehninger- Principles of Biochemistry

7. Facilities required for teaching and learning

- I. Multimedia
- II. Text Books
- III. Recommended Books
- IV. Lab. Reagents
- V. Printer
- VI. Photostat facility

Course coordinator:

Head of Department

Date: 13/11/2012