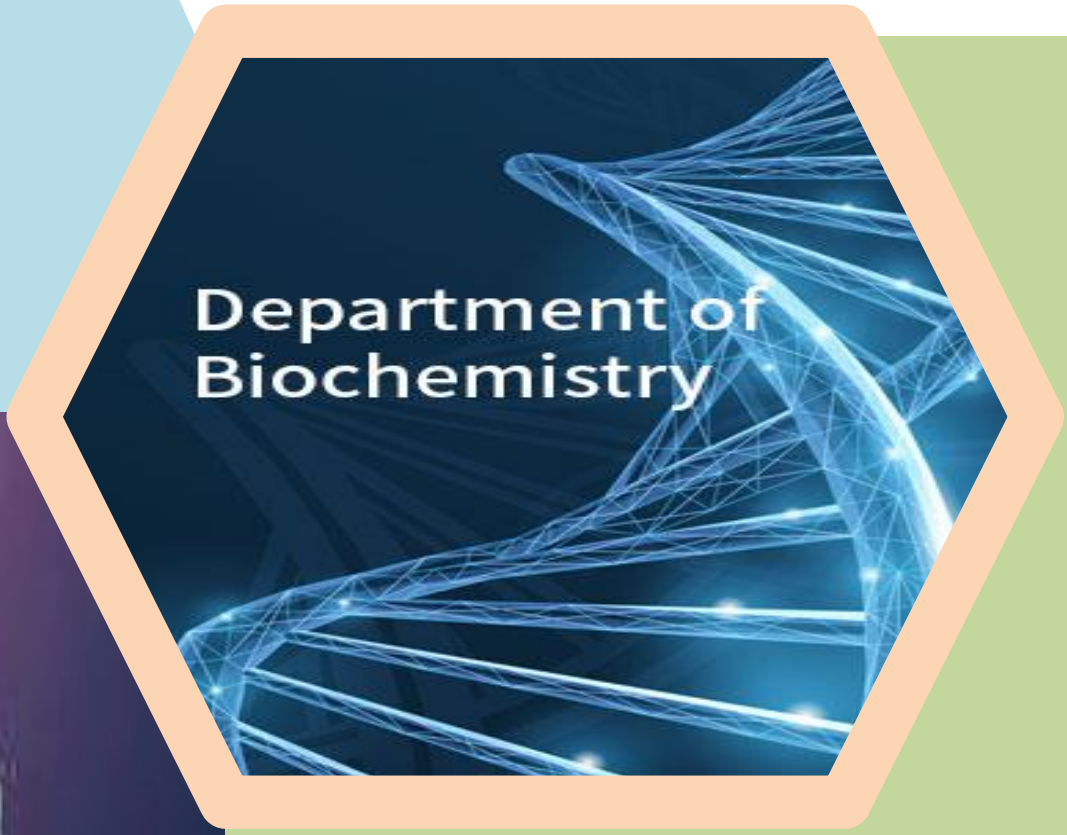
Women Dental College
Abbottabad-Pakistan



Study Guide - 1st Year BDS

Contents:

STUDY GUIDE

1st Year BDS

BIO- CHEMISTRY

Description:

The Biochemistry Department at the Women Medical and Dental College is a distinguished and dynamic academic unit dedicated to advancing the understanding and application of biochemistry in dental medicine. Our department boasts a team of expert faculty members, whose research and teaching encompass a broad spectrum of biochemistry disciplines, ranging from molecular biology and enzymology to genetics and bimolecular interactions. Through state-of-the-art facilities and innovative instructional methods, we foster a stimulating learning environment, equipping our students with comprehensive knowledge and research skills. With a strong emphasis on ethical practices and scientific inquiry, our department plays a pivotal role in shaping competent dental professionals and contributing to the progress of dental healthcare.

Overview

Program	Bachelor of Dental Surgery
Course Name	Bio-Chemistry
Contact Hours	150 hrs
Infrastructure Requirements	Lecture hall, labs

Faculty Responsible For Course Conduction:

Sr.no	Faculty	Designation
01	Dr. Madeeha Jadoon	HOD
02	Dr Arusa Quazi	Lecturer
03	Dr. Momina Tahir	Lecturer

Details of Supporting Staff:

Sr.no	Staff	Designation
01	Mr. Shahzad	Lab Tech.
02	Miss Kiran	Compute operator
03	Miss Sonia	Lab Asst.
04	Mr. Qari Naseer	Office Boy

Objectives & Learning Strategies/TOS:

Sr.no	Topic	Learning Outcomes	Teaching Hours	Mode of Teaching	Assessment Tools
01	Bio-chemistry of cell	At the end of the session students will be able to of this section on the biochemistry of cell, students will demonstrate comprehensive knowledge and proficiency in the application, analysis, synthesis, and evaluation of key concepts related to cellular biochemistry.	02	LGF	sub stage,
02	Carbohydrates	Upon completing the Carbohydrates section, students will possess comprehensive knowledge, enabling the proficient application, analysis, synthesis, and evaluation of carbohydrate-related concepts.	06	LGF	Presentation stage, sub stages, MCQs/SEQs
03	Proteins	Upon completing the	08	LGF	Presentation

		Protein topic, students will demonstrate a deep knowledge and the ability to apply it effectively in real-world scenarios.			stage, sub stages, MCQs/SEQs
04	Nuclecotide &Nucleci Acid	Upon concluding the Nucleotide & Nucleic Acid topic, students will possess a profound knowledge, adeptly applying it to the synthesis and comprehension of nucleic acid-related concepts.	06	LGF	MCQs/SEQs
05	Lipids	Upon concluding the Lipids topic, students will exhibit comprehensive knowledge and the capacity for effective application, analysis, synthesis, and evaluation of lipid-related concepts.	08	LGF	Presentation stage, sub stages, MCQs/SEQs
06	Biological Membranes	Upon completing the Biological Membrane topic, students will possess a comprehensive understanding of membrane structure and function, enabling them to apply this knowledge effectively in the study and analysis of various biological processes and systems.	02	LGF	Stage, MCQs/SEQs

07	Enzymes	Upon successful completion of the Enzymes topic, students will demonstrate a comprehensive understanding of enzyme structure, function, and regulation. They will be proficient in applying this knowledge to analyze and evaluate enzymatic reactions in diverse biological contexts, contributing to a deeper comprehension of biochemical processes.	05	LGF	Stage, MCQs/SEQs
08	Porphyrins & Hemoglobin	At the end of the session students will be able to of the "Porphyrins and Hemoglobin" topic, students will possess a comprehensive understanding of the structure, function, and significance of porphyrins and hemoglobin in biological systems. They will be able to apply this knowledge to analyze and evaluate the roles of these molecules in oxygen transport, energy production, and enzymatic processes, thereby deepening their	04	LGF	Presentation stage, MCQs/SEQs

		comprehension of essential biochemical concepts.			
09	Vitamins	At the end of the session of the "Vitamins" topic, students will have acquired a comprehensive understanding of the various types of vitamins, their biochemical functions, dietary sources, and the consequences of deficiencies or excess intake. They will be equipped to apply this knowledge to evaluate the nutritional significance of vitamins and make informed recommendations for maintaining optimal health and preventing deficiencies.	08	LGF	Presentation stage, sub stages, MCQs/SEQs
10	Bio Chemistry of Digestive Tract	At the end of the "Biochemistry of the Digestive Tract" topic, students will possess a comprehensive understanding of the biochemical processes involved in digestion, absorption, and metabolism of nutrients within the gastrointestinal system. They will be able to	05	LGF	Presentation stage, MCQs/SEQs

		apply this knowledge to analyze and evaluate the mechanisms underlying nutrient breakdown and assimilation, contributing to a deeper comprehension of the physiological aspects of digestion and their relevance to overall health.			
11	Minerals & Trace Elements	At the end of the session the students will have acquired a comprehensive understanding of the essential minerals and trace elements, their physiological roles, dietary sources, and the implications of imbalances. They will be equipped to apply this knowledge to evaluate the significance of these elements in maintaining overall health and to make informed recommendations for addressing deficiencies or excesses, contributing to a deeper comprehension of nutritional biochemistry.	05	LGF	Sub stages, Stage, MCQs/SEQs
12	Laboratory Practical	At the end of the session of laboratory practical, students will	91	Practical	OSPE

		have developed proficiency in applying theoretical knowledge to practical experiments, demonstrating competence in experimental techniques, data collection, analysis, synthesis of results, and critical evaluation of experimental outcomes.			

Learning Resources:

Sr.no	Text Books	Edition
01	Lippincott illustrated reviews	8th
02	Harper's illustrated Biochemistry	30th
03	U. Satyanarayan and U. Chakarpani	4th
	Reference Books	
01	Lippincott illustrated reviews	Lippincott illustrated reviews
02	MLA. Harvey, Richard A., PhD. Lippincott's illustrated reviews: Biochemistry	MLA. Harvey, Richard A., PhD. Lippincott's illustrated reviews: Biochemistry
03	U. Satyanarayana Biochemistry	U. Satyanarayana Biochemistry
04	U. satyanarayan and U. Chakarpani 4th edition	U. satyanarayan and U. Chakarpani 4th edition
05	Harper's illustrated Biochemistry	Harper's illustrated Biochemistry
06	Rodwell VW, Bender DA ,Botham KM., Kennelly PJ, Weil P. Eds. Victor W. Rodwell et al.	Rodwell VW, Bender DA ,Botham KM., Kennelly PJ, Weil P. Eds. Victor W. Rodwell et al.
07	Fundamentals of Biochemistry	FundamentalsofBiochemistry
08	Donald V., Judith G. Voet, Charlotte W. John wiley and sons, New york	Donald V., Judith G. Voet, Charlotte W. John wiley and

		sons, New york
09	Netter's essential Biochemisty	Netter's essential Biochemisty
10	Lippincott illustrated reviews	Lippincott illustrated reviews
11	MLA. Harvey, Richard A., PhD. Lippincott's illustrated reviews: Biochemistry	MLA. Harvey, Richard A., PhD. Lippincott's illustrated reviews: Biochemistry

Additional Learning Resources:

Hands on	Labs/Practical
Skills Lab	No
Videos	1. Carbohydrates; https://youtu.be/FoswKE7tUH8?si=po0Z4iyzRFfeElkO 2. Michaelis Menten Equation; https://youtu.be/yML2uq2Jjm8?si=vmX2tZogjRZGP6xi 3. Heme synthesis; https://youtu.be/Hwn_JoeUADU?si=sKtOv9pSpkF89w6N 4. Buffers; https://youtube.com/watch?v=JLWcbXccZi8&feature=shared
Internet	WDC Library/ LMS

Assessment Methods:

MCQs:

Multiple choice questions; Single best Type

OSPE/OSCE: Objective Structured Practical

Multiple Choice Questions:

1. Single best type MCQs five options with one correct answer and four distractors are part of assessment.
2. Correct answer carries one mark, and incorrect will be marked zero. Rule of negative marking is not applicable.

3. Students mark their responses on specified computer-based designed sheet.

Objective Structure Practical/Clinical Examination:

1. Five OSPE stations are used for formative as well as summative assessment.
2. Time allocated for each station is five minutes as per Examination rules of Khyber Medical University, Peshawar.
3. All students are rotated through the same stations.
4. Stations used are unobserved, observed, and interactive and rest stations.
5. On unobserved stations, slides, Instruments, flowcharts, case scenarios may be used to assess cognitive domain.
6. On observed station, examiners don't interact with candidates and just observe the performance of skills/procedures.
7. On interactive station, examiner asks questions related to the task within the allocated time.
8. On rest station, students are not given any task. They just wait to move to the next station.

Presentation:

Students are given topics for presentation either individually or in the groups. They are encouraged to prepare presentation on power point to enhance their understanding of the topic.

Internal Assessment Criteria:

1. 10% weightage of internal Assessment in professional exam is policy of Khyber Medical University.

2. This internal assessment will comprise of following components

a. Attendance. b. Attitude.
c. Monthly tests. d. Midterms.
e. Pre-Prof.

Examination Rules & Regulations:

1. One class test of the subject may be held monthly, marks of which will be included in internal assessment. Marks for class test can vary according to syllabus and teacher's choice.
2. Mid-Term exam comprising 25 MCQs of single best type and 25 marks SEQs will be held in the middle of the session.
3. Pre-prof Exam comprising 25 MCQs and 25 marks SEQs will be conducted at the end of session before prep leaves.
4. The pattern of class tests, Mid-Term & Pre-prof will be same as the Professional Exam taken by Khyber Medical University, Peshawar.
5. OSPEs will be conducted at the end of Mid-Term & Pre-prof Exam.

Short Answer Question:

Classify Proteins on the bases of functions?

Enzymes: Catalyze biochemical reactions.

Structural: Provide cell and tissue support.

Transport: Carry molecules or ions.

Hormones: Regulate physiological processes.

Antibodies: Defend against pathogens.

Receptors: Bind ligands for signaling.

Contractile: Enable muscle contraction.

Storage: Store essential molecules.

Defensive: Protect against harmful agents.

Signaling: Transmit cellular messages.

Chaperones: Aid protein folding.

Adhesion: Mediate cell interactions.

Glycoproteins: Carbohydrate-linked functions.

Regulatory: Control gene expression.

Suggestions for Next Academic Year:

Provide this study guide to students as their comprehensive academic roadmap and guidance for the upcoming year.

Prepared By:

HOD Bio-Chemistry Department
Assistant Professor Dr. Madeeha Jadoon
MBBS, M Phil (Bio-Chemistry)