

K V G MEDICAL COLLEGE, SULLIA

Department of Biochemistry

Teaching Schedule for I MBBS (2019-2020 Batch) as per competency

based undergraduate medical Curriculum

Foundation course – August 2019

1st Quarter (Sep, Oct, Nov-2019)

Month	Topics / Subtopics	Teaching Method	Integrated	
			H	V
September 2019 1	Cell & subcellular components	lecture / Small group	Physiology	
2	Membrane transport mechanisms	lecture / Small group		
3	Chemistry of carbohydrates : Classification Structure, Biomedical importance	lecture / Small group		
4	Extracellular matrix: Components, protein targeting & associated disorders.	lecture / Small group		Medicine
5	Enzymes: general aspects, Factors influencing enzyme activity, Inhibition, Regulation, Classification, Co-factors, Isoenzymes, Mechanism of enzyme action Diagnostic enzymology	lecture / Small group Case discussion, DOAP		Pathology Medicine
October 2019 1	Biological Oxidation: Components of ETC, Sites of ATP synthesis, , inhibitors, Oxidative phosphorylation, Uncouplers	lecture / Small group		
2	Digestion & absorption of carbohydrates	lecture / Small group		Medicine
3	Pathways of carbohydrate metabolism & its regulation & associated clinical conditions. (Glycolysis, gluconeogenesis, glycogen metabolism, HMP pathway)	lecture / Small group		Pathology , Medicine
4	Concept of TCA cycle, regulation & amphibolic role	lecture / Small group		
5	Poisons that inhibit crucial enzymes of carbohydrate metabolism (fluoride, arsenite)	lecture / Small group	Physiology	
6	Regulation of blood glucose in health & disease	lecture / Small group		Medicine

7	Estimation of blood glucose & other laboratory investigations	lecture / Small group		Medicine
November-2019 1	Minerals: Functions, Metabolism, Homeostasis, & its associated disorders	lecture / Small group		Medicine
2	Nucleotides & Nucleic acid chemistry- structure & functions Biological important nucleotides cell cycle	lecture / Small group		
3	Nucleotide metabolism- & its associated disorders	lecture / Small group	Physiology	Medicine
4	Chemistry of Haemoglobin (Structure & function relationship)	lecture / Small group		

2nd Quarter (Dec-2019, Jan, Feb-2020)

December-2019 1	Lipid Chemistry: Definition, classification & examples, Biomedical importance	lecture / Small group		Medicine
2	Digestion & absorption of lipids	lecture / Small group		Medicine
3	Lipid metabolism (β -oxidation, Ketone body metabolism, de-novo synthesis of fatty acids, Cholesterol metabolism) & its associated disorders.	lecture / Small group		
4	Lipoproteins metabolism & associated disorders (classification, associated clinical condition)	lecture / Small group		Medicine
5	Prostaglandin metabolism, therapeutic uses & inhibitors	lecture / Small group		Medicine
6	Acid base balance- maintenance of arterial blood pH, associated clinical conditions. Interpretation of ABG result & various disorders	lecture / Small group	Physiology	Medicine
7	Water & electrolyte balance & imbalances	lecture / Small group	Physiology	Medicine
8	Biochemical role of vitamins & its associated deficient disorders.	lecture / Small group		Medicine
January -2020 1	Plasma proteins	lecture / Small group	Physiology	
2	i) Renal function test ii) Liver function test Tests that are commonly done in clinical practice to assess the functions of these organs,	lecture / Small group	Anatomy Physiology	Pathology Medicine

	abnormalities			
3	Haem: The functions & metabolism, Porphyrins	lecture / Small group	Physiology	Pathology Medicine
4	Hemoglobin: Types, derivatives, physiology & pathological relevance	lecture / Small group	Physiology	Pathology Medicine
February-2020 1	Molecular biology : Replication Transcription Translation	lecture / Small group		
2	Mutation & regulation of gene expression	lecture / Small group		Pediatrics
3	Techniques : PCR, rDNA technology & their applications	lecture / Small group		Pediatrics

3rd Quarter (March, April, May-2020)

March-2020 1	Mechanism of hormone action	lecture / Small group	Physiology	
2	Thyroid function tests	lecture / Small group	Anatomy Physiology	Medicine Pathology ENT
3	Adrenal function tests	lecture / Small group	Anatomy Physiology	Medicine Pathology
4	Hyperglycemia & diabetic mellitus	lecture / Small group		Medicine OBG
5	Free radical, lipid peroxidation in the pathogenesis of cancer, complications of diabetes & atherosclerosis	lecture / Small group		Medicine Pathology
6	Role of antioxidant defense system in body	lecture / Small group		
7	Chemistry of proteins- General aspects of proteins & amino –acid & structural organization of proteins	lecture / Small group		
April-2020 1	Digestion & absorption of dietary protein	lecture / Small group		Pediatrics
2	Metabolism of protein & associated disorders	lecture / Small group		Pediatrics
3	Intermediary metabolism	lecture / Small group		
4	Detoxification & xenobiotics metabolism	lecture / Small group		

May-2020 1	Nutrition- Importance of various dietary component & importance of dietary fibers BMR, calorie value of food, SDA, N ₂ balance, R.Q, Balanced diet	lecture / Small group		Medicine Pediatrics Pathology
2	Nutritional disorders	lecture / Small group		Pediatrics
3	Immunoglobins- classification, structure, functions & associated disorders.	lecture / Small group		OBG Surgery Pathology
4	Antigens & concepts involved in vaccine development	lecture / Small group		Pathology Pediatrics Microbiology
5	Innate & adaptive humeral response role of T helper cells	lecture / Small group	Physiology	Pathology
6	Biochemistry of cancer- Oncogenes, growth factors, Tumor markers, p53, apoptosis	lecture / Small group		OBG Surgery Pathology
7	Automation in clinical Biochemistry	lecture / Small group		
8	Quality control: Interval & external	lecture / Small group		
9	Biomedical waste management	lecture / Small group		

PRACTICALS

1	Laboratory equipments, apparatus, Good safe laboratory practices & waste disposal	lecture / Small group discussion		
2	Preparation of buffer & pH estimation	lecture / Small group discussion		
3	Normal urine analysis	DOAP		
4	Abnormal urine analysis	DOAP		
5	Screening of inborn error & use of paper chromatography	lecture / Small group		
6	Principle of colorimetry	lecture / Small group		
7	Serum Creatinine estimation & creatinine clearance	Practical		
8	S. Protein, albumin & A G ratio	Practical		
9	S. Total cholesterol & HDL estimation	Practical		
10	S. Triglyceride estimation	Practical		

11	S. Calcium & Phosphorus estimation	Practical		
12	S. Bilirubin estimation	Practical		
13	S. SGOT/SGPT estimation	Practical		
14	S.ALP estimation	Practical		
15	Composition of CSF	lecture / Small group		
16	<p>The basic principles of commonly used equipments / techniques in biochemistry laboratory including-</p> <ul style="list-style-type: none"> • Paper chromatography of amino acid • Protein electrophoresis • TLC, PAGE • Electrolyte analysis by ISE • ABG analyzer • ELISA • Immunodiffusion • Autoanalyser • DNA isolation from blood/tissue 	Demonstration		
17	<p>Basis and rationale of biochemical tests done in the following conditions-</p> <ul style="list-style-type: none"> - Diabetes mellitus - Dyslipidemia - Myocardial infarction - Renal failure, gout - Proteinuria - Nephritic syndrome - Edema - Jaundice - Liver diseases, pancreatitis, disorders of acid-base balance, thyroid disorders 	lecture / Small group		
18	Discuss the principles of spectrophotometry	lecture / Small group		