

INTEGRATED CURRICULUM FOR MBBS AT KIMS

1<sup>st</sup> year MBBS

Week	Coding	Anatomy	Physiology	Biochemistry
<b>Week 1</b>  Classes  Dissections/ Practicals  Problems Based Learning	Ana -101  Ana -102 Ana -103 Ana -104 Ana -105  Ana -106	1. 1.Introduction & General Terms of Position-I 2. Structure of Cell & nucleus 3. Cell ORGANELLES-I 4. Cell ORGANELLES-II 5. Cell Cycle  1. Anatomy of Bone-I 2. Anatomy of Bone-II 3. Anatomy of Bone-III    Problems Based Learning	<b>General Physiology</b>  1. Introduction 2. Cell and cell membrane 3. Cell organelle and Homeostasis 4. Regulation of body functions 5. Characteristics of control system	<b>-Introduction of biochemistry</b> <b>-Biochemistry of cells and body fluids I</b>  -Ionization of water & weak acids, bases  -Concept of pH, and pH scale

<p><b>Week 2</b></p> <p>Classes</p> <p>Dissections And Practicals</p> <p>Problem Based Learning</p>	<p>Ana -107</p> <p>Ana -108</p> <p>Ana -109</p> <p>Ana -110</p> <p>Ana -111</p> <p>Ana-112</p> <p>Ana -113</p>	<ol style="list-style-type: none"> <li>1. Types Of Cells-I</li> <li>2. Types of Cells-II</li> <li>3. Cell Division</li> <li>4. The Integumentary System</li> <li>5. Nervous System</li> </ol> <ol style="list-style-type: none"> <li>1. Anatomy of Joints-I</li> <li>2. Anatomy of Joints-II</li> <li>3. Anatomy of Ligaments</li> <li>4. Dissection Videos</li> </ol> <p>Problems Based Learning</p>	<ol style="list-style-type: none"> <li>1. Specific organelles</li> <li>2. Cell function and functional system</li> <li>3. Genetics I</li> <li>4. Genetics II</li> <li>5. Cell Reproduction and differentiation</li> </ol>	<p><b>Biochemistry of cells and body fluids II</b></p> <p>-Dissociation constant &amp; titration curve of weak acids, the concept of pK values</p> <p>-Buffers, their mechanism of action</p>
<p><b>Week 3</b></p> <p>Dissection &amp; Practicals</p> <p>Problem Based Learning</p>	<p>Ana -114</p> <p>Ana -115</p> <p>Ana -116</p> <p>Ana -117</p>	<ol style="list-style-type: none"> <li>1. Lymph Vascular System</li> <li>2. Composition of Blood-1hr</li> <li>3. Blood Cells-I</li> <li>4. Blood Cells-II</li> <li>5. Menstrual Cycle</li> </ol> <p>Dissection Videos</p> <p>Problems Based Learning</p>	<p style="text-align: center;"><b>Blood</b></p> <ol style="list-style-type: none"> <li>1. RBCs</li> <li>2. Stages of Differentiations of RBCs</li> <li>3. Formation of HB</li> <li>4. Aenemias I</li> <li>5. Aenemias II</li> </ol>	<p><b>Hemoglobin &amp; Porphyrine:</b></p> <p>-Chemistry and classification of Porphyrins</p> <p>-Biosynthesis of Porphyrins</p> <p>-Structures, functions and types of hemoglobin</p>

<p><b>Week 4</b></p> <p>Classes</p> <p>Dissection &amp; Practicals</p> <p>Problem Based Learning</p>	<p>Ana -118</p> <p>Ana -119</p> <p>Ana -120</p>	<ol style="list-style-type: none"> <li>1. Fertilization Events</li> <li>2. Cleavage and Implantation</li> <li>3. Typical Spinal Nerve</li> <li>4. Epithelium &amp; its classification I</li> <li>5. Epithelium &amp; its classification II</li> </ol> <p>Dissection Videos</p> <p>Problems Based Learning</p>	<p style="text-align: center;"><b>Blood</b></p> <ol style="list-style-type: none"> <li>1. Polycythemia</li> <li>2. WBCs and Phagocytosis</li> <li>3. Inflammation</li> <li>4. Leucopenia and Leukemia</li> <li>5. Immunity</li> </ol>	<p><b>Hemoglobin &amp; porphyrine:</b></p> <p>-Oxygen binding capacity of hemoglobin. factors regulating the oxygen binding capacity</p> <p>-Degradation of heme</p> <p>-Formation of Bile pigments, its types, transport and excretion</p>
<p><b>Week 5</b></p> <p>Classes</p> <p>Dissection &amp; Practicals</p> <p>Problem Based Learning</p>	<p>Ana -121</p> <p>Ana -122</p>	<ol style="list-style-type: none"> <li>1. Nerves of upper limb-I</li> <li>2. Nerves of upper limb-II</li> <li>3. Nerves of upper limb-III</li> <li>4. 2<sup>nd</sup> week of Development-I</li> <li>5. Glands &amp; its classification</li> </ol> <p>Dissection videos</p> <p>Problems Based Learning</p>	<ol style="list-style-type: none"> <li>1. Role of T and B lymphocytes</li> <li>2. Humoral Immunity</li> <li>3. Anti bodies role of B emphocysis</li> <li>4. Cell medicated immunity</li> <li>5. Allergy and hypersensitivity</li> </ol>	<p><b>Hemoglobin &amp; porphyrine:</b></p> <p>-Hyperbilirubinimea, their biochemical causes and differentiation</p> <p>a)jaundice and its types</p> <p>b)Hemoglobinopathies and their biochemical causes</p> <p>-Porphyrrias, classification and clinical correlation with biochemical causes</p>

<b>Week 6</b>	Ana -123	1. Microscopic Structure of Immune System and Lymphoid Organs I 2. Microscopic Structure of Immune System and Lymphoid Organs II 3. 2 <sup>nd</sup> week of Development II 4. Nerves of upper limb III 5. Nerves of upper limb IV	<b>Haemostasis</b> 5 1. OAB and blood types 2. RH Factor and erythroblastosis fetalis 3. Transplantation of tissues and organs 4. Hemostasis and coagulation 5. Events in hemostasis	<b>CARBOHYDRATES:</b> -Definition, biochemical function and classification -Isomerism of chemical properties -Structure and functions of Monosaccharides, and their derivatives
Classes	Ana -124 Ana -125 Ana 126			
Dissection & Practicals	Ana -128	Dissection Videos		
Problem Based Learning		Problems Based Learning		
<b>Week 7</b>	Ana -129	1. Connective Tissue 2. Notochord Formation 3. Neuralation 4. Nerves of upper limb V 5. Nerves of upper limb VI Dissection Videos	1. Blood coagulation basic theory and mechanism 2. Extrinsic path way for clotting 3. Intrinsic path way for clotting 4. Bleeding disorders 5. Anti coagulation and coagulation tests	<b>CARBOHYDRATES:</b> -Disaccharides, their important examples -Oligosaccharides, their combination with other macromolecules -Polysaccharides, their important examples and biochemical role
Classes	Ana -130			
Dissection & Practicals				
Problem Based Learning		Problems Based Learning		

<b>Week 8</b>	Ana -131 Ana -132 Ana -133	1. Development of 3 <sup>rd</sup> week 2. Highlights 4 <sup>th</sup> to 8 <sup>th</sup> week 3. Muscle Type-I 4. Nerves of Upper limb-VII 5. Nerves of Upper limb-VIII	1. Transport through Cell Membrane 1 2. Transport through cell membrane 3. Membrane potential and action potential 1 4. Membrane potential and action potential 2 5. Contraction of skeletal muscles 1	<b>CARBOHYDRATES:</b> -Homopolysachides -Hetropolysacharides -MCQs & SEQs/ Presentations by students
Classes				
Dissection & Practicals	Ana -134	Dissection videos		
Problem Based Learning		Problems Based Learning		
<b>Week 9</b>	Ana -135  Ana -136  Ana -137	1. Embryology of Skeletal System-I 2. Embryology of Skeletal System-II 3. Nerves of Upper limb 9 4. Nerves of Upper limb 10 5. Muscle Type-II  Dissection videos  Problems Based Learning	1. Contraction of skeletal muscles 2 2. Excitation of skeletal muscles 3. Neuro muscular transmission and excitation contraction coupling 4. Contraction and excitation of smooth muscles 1 5. Contraction and excitation of smooth muscles 2	Seminars/Presentations I Seminars/Presentations II Seminars/Presentations III
Classes				
Dissection & Practicals				
Problem Based Learning				
<b>Week 10</b>		<b>1<sup>st</sup> stage</b>	<b>1<sup>st</sup> stage</b>	<b>1<sup>st</sup> stage</b>

<b>Week 11</b>				
Classes	Ana -138	Upper Limb + CVS Anatomy 1. Development of the CVS I 2. Microscopic Structures of CVS -I 3. Anatomy of the heart-I 4. Anatomy of the heart-II 5. Anatomy of the heart-III	HEART & ECG and CIRCULATION 1. The Heart 2. Excitation Contraction Coupling 3. Ventricular Pumping 4. Preload & After load 5. Rhythmical Excitation of Heart	<b>ENZYMES:</b> -Introduction, definition, mechanism of catalysis -Coenzymes, co-factors -Classification of enzymes -Isoenzymes, their clinical importance
Dissection & Practicals Problem Based Learning	Ana -139	Dissection Videos  Problems Based Learning		
<b>Week 12</b>				
Classes	Ana -140  Ana -141	1. Development of the CVS II 2. Microscopic Structures of CVS -II 3. Anatomy of the heart-IV 4. Axilla-I 5. Axilla-II	1. Purkinje Fibre system 2. ECG General 3. ECG Paper & Leads 1 4. ECG Paper & Leads 2 5. Triaxial & Hexaxial System	<b>ENZYMES:</b> -Factors affecting enzymes activity, Michaelis-Menten Equation, -Lineweaverburk equation and their application in enzyme kinetics (no derivation of equations) - Enzyme inhibitors and their classification &
Dissection & Practicals Problem Based Learning	Ana -142	Dissection Videos  Problems Based Learning		

<b>Week 13</b>	Ana -143	1. Pectoral region I	1. Degrees & Abnormalities of Vector	<b>ENZYMES:</b> -Application of enzyme in clinical diagnosis and therapeutic use - MCQ and SEQ -Presentations by students
Classes	Ana -144	2. Pectoral region II	2. Heart Blocks	
	Ana -145	3. Development and Gross Anatomy of Breast	3. Current of Injuries	
	Ana -146	4. Scapular Regions-I	4. Arrhythmia 1	
		5. Scapular Regions-II	5. Arrhythmia 2	
Dissection And Practicals	Ana -147	6. Nerves and Vessels of The thoracic Cavity		
Problem Based Learning		Dissection Videos		
		Problems Based Learning		
<b>Week 14</b>	Ana -148	1. Development of upper limb-I	1. Circulation in General	<b>PROTEINS &amp; AMINO ACID:</b> -Definitions, Biomedical importance -classification of proteins based on Physiochemical properties/ Functional -Nutritional/ Structural
Classes	Ana -149	2. Upper Arm compartments-I	2. Basic Principles of Circulation	
	Ana -150	3. Upper Arm compartments-II	3. Blood Pressure	
Dissection and Practicals		4. Forearm compartments-I	4. Resistance	
		5. Forearm compartments-II	5. Conductance	
	Ana -151	Dissection videos		
Problem Based Learning		Problems Based Learning		

<b>Week 15</b>	Ana -152 Ana -153 Ana -154	1. Development of upper limb-II 2. Forearm compartments-III 3. Hand-I 4. Hand-II 5. Hand-III	1. Hematocrit 2. Arterial pressure Pulsations 3. Mean Arterial pressure & veins 4. Microcirculation 5. Fluid Filtration	<b>PROTEINS &amp; AMINO ACID:</b> -Amino acids, their structure, properties & functions -Classification and nutritional significance of amino acids -Dissociation, titration and importance of amino acid in pH maintenance
Dissection and Practicals	Ana -155	Dissection Videos		
Problem Based Learning		Problems Based Learning		
<b>Week 16</b>	Ana -156 Ana -157 Ana -158	1. Development of upper limb-III 2. Arteries of Upper Limb-I 3. Arteries of Upper Limb-II 4. Arteries of Upper Limb-III 5. Joints of upper limb-I	1. Analysis of Filtration Forces 2. Lymphatics 3. Tissue Blood Flow 1 4. Tissue Blood Flow 2 5. Nervous Regulation of B.P 1	<b>PROTEINS &amp; AMINO ACID:</b> -Structure of proteins and their significance - Separation of proteins e.g. salting out, Electrophoresis, Chromatography, Centrifugation -Plasma Proteins & their clinical significance
Dissection and Practicals	Ana -159	Dissection videos		
Problem Based Learning		Problems Based Learning		

<b>Week 17</b> Classes  Dissection and Practicals Problem Based Learning	Ana-160  Ana -161  Ana -162	1. JOINTS of Upper limb-II 2. JOINTS of Upper limb-III 3. JOINTS of Upper limb-IV 4. Nerves of lower limb-I 5. Nerves of lower limb-II Dissection Videos  Anatomy Seminar	1. Nervous Regulation of B.P 2 2. Kidneys Role in B.P 3. Renin Angiotensin System 4. Cardiac output 1 5. Cardiac output 2	<b>LIPIDS &amp; BIOLOGICAL MEMBRANE:</b> -Definition, biomedical function -Classification of lipids -Phospholipids, Glycolipids and their Biochemical Significance
<b>Week 18</b>  Classes	Ana -163  Ana -164	1. Nerves of Lower Limbs 2. Nerves of Lower Limb 3. Nerves of Lower Limbs 4. Nerves of Lower Limbs 5. Nerves of Lower Limbs	1. Ischemic Heart Disease 2. Cardiac Failure 3. Edema 4. Valvular Diseases 5. Shock	<b>LIPIDS &amp; BIOLOGICAL MEMBRANE:</b> -Fatty acids, chemistry, classification and biochemical function -Essential fatty acids -Eicosanoids, their classification and functions in health and disease
Dissection And Practicals	Ana -165	Dissection Videos		
Problem Based Learning		Problems Based Learning		

<b>Week 19</b> Classes	Ana -166	Anatomy seminars	Physiology seminars	<b>LIPIDS &amp; BIOLOGICAL MEMBRANE:</b> -Steroids, Sterol e.g. Cholesterol, their chemistry, functions and clinical significance -Lipid Peroxidation ,Biochemical membrane, composition, importance of lipid and proteins in membranes -Biochemical membrane, Biochemistry of membrane transport mechanism,
Dissection And Practicals	Ana -167	Dissection videos	Revision classes	
Problem Based Learning	Ana -168	Revision classes		
<b>Week 20</b>		<b>2<sup>nd</sup> stage</b>	<b>2<sup>nd</sup> stage</b>	<b>2<sup>nd</sup> stage</b>
<b>Week 21</b>  Classes	Ana -169	1. Embryology of The Respiratory System-I	Respiration	<b>VITAMINS:</b> -Introduction, classification -Chemistry, Biochemical Functions, Deficiency manifestations, daily allowances and source of water soluble and fat-soluble vitamins, Hyper vitaminosis of: -Vitamin A -Vitamin D
	Ana -170	2. Embryology of The Respiratory System-II	1. Mechanics of pulmonary ventilation	
	Ana -171	3. Histology of Respiratory System-I	2. Compliance of lungs	
	Ana -172	4. Histology of Respiratory System-II	3. Pulmonary volumes and capacities (spirometry)	
Dissection And Practicals	Ana -171	5. Thoracic Wall and Muscles of Respiration	4. Alveolar ventilation 1	
Problem Based Learning	Ana -172	Dissection Videos	5. Alveolar ventilation 2	
		Problems Based Learning		

<b>Week 22</b>   Classes	Ana -173  Ana -174  Ana -175	1. Embryology of The Respiratory System-I 2. Embryology of The Respiratory System-II 3. Histology of Respiratory System-I 4. Histology of Respiratory System-II 5. Thoracic Wall and Muscles of Respiration	1. Functions of the respiratory passages 2. Physiologic anatomy of the pulmonary circulatory system & pressures 1 3. Physiologic anatomy of the pulmonary circulatory system & pressures 2 4. Pulmonary capillary dynamics 5. Physics of diffusion and gas partial pressure 1	<b>VITAMINS:</b> -Vitamin E and K <b>Water Soluble Vitamins</b> -Thiamine and Riboflavin -Niacin and Pantothenic acid
Dissection and Practicals	Ana -176	Dissection videos		
Problem Based Learning		Problems Based Learning		

<b>Week 23</b>	Ana -177	1. Lungs And Trachea-I 2. Lungs And Trachea-II 3. Pleura 4. Gluteal Region 5. Gluteal Region	1. Physics of diffusion and gas partial pressure 2 2. Composition of the alveolar air & its relation to the atmospheric air 3. The respiratory membrane and diffusion of gases i 4. The respiratory membrane and diffusion of gases ii 5. Transport of oxygen from the lungs to the body tissues	<b>VITAMINS:</b> -Pyridoxine and Folic acid -Cynacobalamin -Vitamin CAscorbic acid
Classes	Ana -178 Ana -179			
Dissection and Practicals	Ana-180	Dissection Videos		
Problem Based Learning		Problems Based Learning		
<b>Week 24</b>	Ana -181	1. Mediastinum-I 2. Mediastinum-II 3. Thighs Anterior-I 4. Thigh Anterior -II 5. Thighs Medial-1	1. Oxygen hemoglobin dissociation curve 2. Transport of CO <sub>2</sub> in the blood 3. Respiratory center and nervous regulation of respiration 1 4. Respiratory center and nervous regulation of respiration 2 5. Chemical control of respiration	<b>Nucleotide &amp; Nucleic Acid:</b> -Chemistry and structure of nucleosides and their biochemical role -Nucleotides, structure, their derivatives and their biochemical role
Classes	Ana -182			
Dissection And Practical	Ana -183	Dissection Videos		
Problems Based Learning		Problems Based Learning		

<b>Week 25</b>	Ana -184	1. Popliteal Fossa-I 2. Popliteal Fossa-II	1. Regulation of respiration during exercise	<b>Nucleotide &amp; Nucleic Acid:</b> -Synthetic derivatives of Purine and Pyrimidines, their role in Health and disease -Nucleic acids, their types, structure and functions.
Classes	Ana -185 Ana -186 Ana -187	3. Leg Anterior Compartment 4. Leg Lateral Compartment 5. Leg Posterior Compartment	2. Methods for studying respiratory abnormalities & specific pulmonary abnormalities	
Dissection And Practicals	Ana -188	Dissection Videos	3. Hypoxia and oxygen therapy 4. Effects of low oxygen pressures on body	
Problems Based Learning		Problems Based Learning	5. Effects of acceleratory forces on the body in aviation 1	
<b>Week 26</b>	Ana -189 Ana -190	1. Development of The Lower Limb-I 2. Foot-I 3. Foot-II 4. Foot-III	1. Effects of acceleratory forces on the body in aviation 2	<b>MINERAL &amp; TRACE ELEMENTS:</b> -Classification and Biochemical role of mineral -Bone metabolism, osteoprososis, osthomalacia -Calcium and vit-D metabolism, rickets
Classes	Ana -191	5. Joints of Lower Limb-I	2. Effects of high partial pressure of the individual gases on the body	
Dissection And Practicals	Ana -192	Dissection Videos	3. Decompression of divers after exposure to high partial pressure 4. Sports physiology 1	
Problems Based Learning		Problems Based Learning	5. Sports physiology 2	

<b>Week 27</b>	Ana -193 Ana -194	1. Development of Lower Limb-II 2. Joints of Lower Limb-II 3. Joints of Lower Limb-III 4. Joints of Lower Limb-IV 5. Joints of Lower Limb-V Dissection Videos		<b>MINERAL &amp; TRACE ELEMENTS:</b> -Iodine metabolism, hypothyroidism, hyperthyroidism. -Iron metabolism, anemia. -Magnesium and phosphorous. Micro mineral.
Classes Dissection And Practicals Problem Based Learning	Ana -195	Problems Based Learning		
<b>Week 28</b>	Ana -196 Ana -197	1. Development of Lower Limb-III 2. Arteries of Lower Limb-II 3. Arteries of Lower Limb-II 4. Veins of Lower Limb-I 5. Veins of Lower Limbs-II		Seminars/Presentations I Seminars/Presentations II Seminars/Presentations III
Classes				
Dissections And Practicals	Ana -198	Dissection Videos		
Problem Based Learning		Problems Based Learning		
<b>Week 29</b>		<b>3<sup>rd</sup> stage</b>	<b>3<sup>rd</sup> stage</b>	<b>3<sup>rd</sup> stage</b>
	Ana -199	Preparations for annual examination		



## INTEGRATED CURRICULUM FOR MBBS AT KIMS

### 2<sup>nd</sup> year MBBS

<b>Week</b>		<b>Anatomy</b>	<b>Physiology</b>	<b>Biochemistry</b>
1 Week Classes	Ana-201	1. Microscopic features of Alimentary Canal-I	1. Structure and general function of GIT	Biochemistry of Digestive Tract: 1) Introduction of digestion and absorption 2) Introduction, composition, functions, daily secretion, stimulants and depressants of - Saliva - Gastric Juice & HCL - Pancreatic Juice - Bile Juice - Succus Entericus 3) Digestion and absorption of carbohydrates, proteins, nucleic acid and lipids
Dissection/ Practicals Problem Based Learning	Ana-202	2. Microscopic Features of Alimentary Canal-II	2. Enteric nervous system of gut	
	Ana-203	3. Development of Abdominal Visera-I	3. Mastication, swallowing and their control	
	Ana-204	4. Development of Abdominal Viscera-II	4. Dysphagia, achlasia of esophagus	
	Ana-205	5. Development of Abdominal Vessels	5. Functions and movement of stomach	
	Ana-206	Dissection Videos Problems Based Learning		
2 Week Classes		1. Development of Abdominal Wall 2. Development of Abdominal Cavities	6. Motility – General Principles 7. Functions and movement of Small Intestine 8. Movements & Functions of Large Intestine 9. Defecation 10. Constipation; Diarrhea	1) Biochemical disorders of GIT, e.g. achlorhydria, peptic ulcers, lactose intolerance, cholelithiasis and related disorders Mineral & Trace Elements: 1) Classification and Biochemical role of: 2) Macro minerals (Na, K, Ca, Cl, PO <sub>4</sub> ) - Micro minerals (Fe, Zn, Mg, Se, I, Cu, Cr, Cd, Mn)
Dissection/ Practicals  Problem Based Learning	Ana-207	3. Microscopic Features of Accessory GIT-Viscera-II		
	Ana-208	4. Scrotum, Testis and Epididymis		
	Ana-209	5. Nerves, Arteries, Veins, Lymph Vessels of Anterior Abdominal Wall Dissection Problems Based Learning		

<b>3 Week</b>  Dissection/ Practicals  Problem Based Learning	Ana-210  Ana-211  Ana-212	1. Microscopic Features of Accessory GIT- Viscera-I 2. Posterior Abdominal Wall 3. Peritonium -I 4. Peritonium-II 5. Inguinal Canal Dissection Videos Problems Based Learning	11.Hormones of GIT 12.Vomiting, Disorders of GIT 13.Liver – Anatomy and Blood Flow 14.Liver – (Metabolic Functions) 15.Jaundice & liver function tests	BIOCHEMISTRY OF WATER & ELECTROLYTE IMBALANCE & ACID BASE BALANCE
4 Week Classes  Dissection/ Practicals  Problem Based Learning	Ana-213  Ana-214  Ana-215  Ana-216	1. Development of Urinary System-I  1. Gross Anatomy ok Kidney & Ureter-I 2. Gross Anatomy ok Kidney & Ureter-I 3. Gross Anatomy of Stomach 4. Spermatic Cord Dissection Videos Problems Based Learning	<b>The Body Fluid and Kidneys</b> 1. The body fluid compartments I: Extracellular and intracellular fluids. 2. The body fluid compartments II: Interstitial fluid and edema. 3. Urine formation by the kidneys: I. Glomerular filtration 4. Urine formation by the kidneys: I. Renal blood flow, and their control 5. Urine formation by the kidneys: II. Tubular processing of the glomerular filtrate – 1	NUTRITION 1) Caloric requirements of the body, Balanced Diet 2) Protein Energy Malnutrition 3) Nutritional requirements in Pregnancy, Lactation, New born Nitrogen balance

5 Week Classes       Dissection/ Practicals Problem Based Learning	Ana-217  Ana-218  Ana-219  Ana-220	1. Development of Urinary System-II  2. Microscopic Features of Urinary System-I 3. Gross Anatomy of Duodenum 4. Illium and Jejunum 5. Large Intestine-I Dissection Videos Problems Based Learning	1. Urine formation by the kidneys: II. Tubular processing of the glomerular filtrate - 2 2. Regulation of extracellular fluid osmolarity and sodium concentration – 1 3. Regulation of extracellular fluid osmolarity and sodium concentration - 2 4. Renal regulation of potassium, calcium, phosphate, and magnesium 5. Integration of renal mechanisms for control of blood volume and extracellular fluid volume	METABOLISM OF CARBOHYDRATES 1) Glycolysis, Phases and reactions of Glycolysis, Energetics of Aerobic and Anaerobic glycolysis and their importance , Regulation of Glycolysis 2) Cori's cycle, The fate of Pyruvate 3) The Citric Acid Cycle, Reactions, energetics and regulation and importance of Citric acid cycle Amphibolic nature of citric acid cycle. The anaplerotic reactions and regulations of TCA cycle
6 Week Dissection/	Ana-221 Ana-222 Ana-223 Ana-224 Ana-225 Ana-226	1. Microscopic Features of Urinary System-II 2. Large Intestine-II 3. Paracolic Gutters 4. Rectum 5. Gross Anatomy of Pancreas 6. Development of Pancreas Dissection Videos	1. Regulation of acid-base balance I 2. Regulation of acid-base balance II 3. Kidney diseases and diuretics 4. Body Fluid Compartments – ECF, ICF 5. Regulation of Fluid exchange- ECF & ICF	1) Gluconeogenesis - Important three by-pass reaction of gluconeogenesis - Entrance of amino acids and intermediates of TCA cycle and other nutrients as gluconeogenic substrates - Significance of gluconeogenesis 2) Glycogen Metabolism - Reactions of Glycogenesis - Importance of UDP-Glucose - Regulation of Glycogen Synthase 3) glycogenolysis & Glycogen Phosphorylase - Glycogen phosphorylase 'a' and the blood glucose sensor
Problem Based Learning	Ana-227	Problems Based Learning		

7 Week Classes Dissection/ Practicals Problem Based Learning	Ana-228 Ana-229 Ana-230  Ana-231	1. Pancreas 2. Spleen 3. Abdominal Wall-I 4. Abdominal Wall-II 5. Development of hepatobiliary system  6. Liver-I  Dissection Videos Problems Based Learning	1. Anatomical structures & Functions of Kidney & Nephron 2. GFR-Factors affecting GFR 3. Regulation of GFR 4. Measurement of GFR 5. Renal functions tests	1) Disorders of Glycogen metabolism (Glycogen Storage Diseases) 2) Secondary pathways of carbohydrate (Hexose) metabolism - Hexose Mono Phosphate Shunt, its reactions and importance 3) Glucuronic acid pathway, its reactions and importance, Metabolism of Fructose, Galactose and Lactose
8 Week Classes	Ana-232  Ana-233	1. Liver-II 2. Gall Bladder 3. Hepatic Portal Vein 4. Inferior Vena Cava 5. Abdominal Aorta And its Branches	1. Tubuloglomerular Feed Back Mechanism 2. Tubular Reabsorption – I 3. Tubular Reabsorption – II / Tubular Secretion 4. Mechanism of Conc. & Dilution of Urine 5. Renal failure and Uraemia	1) Regulation of Blood Glucose Level - Hyperglycemia, hypoglycemia and their regulating factors - Biochemistry of Diabetes Mellitus, its Laboratory findings and Diagnosis 2) MCQ SEQ/ Presentations by students
Dissection/ Practicals  Problem Based Learning	Ana-234	Dissection Videos  Problems Based Learning		

9 Week Classes	Ana-235 Ana-236 Ana-237	1. Blood Supply of GIT-I 2. Blood Supply of GIT-II 3. Venous Drainage of GIT 4. Lymph drainage of GIT 5. Nerve Supply of GIT-II 6. Nerve Supply of GIT-I	1. Na <sup>+</sup> , K <sup>+</sup> and volume excretion & plasma Osmolarity 2. Micturition and its Abnormalities 3. Regulation of Acid-Base balance-I 4. Regulation of Acid-Base balance- II 5. Metabolic acidosis/alkalosis	Seminars/Presentations I Seminars/Presentations II Seminars/Presentations III
Dissection/ Practicals	Ana-238			
Problem Based Learning	Ana-239	Dissection Videos Problems Based Learning		
<b>10Week</b>		<b>1<sup>st</sup> stage</b>	<b>1<sup>st</sup> stage</b>	<b>1<sup>st</sup> stage</b>
11 Week Classes	Ana-240 Ana-241	1. Development of Brain-I 2. Anatomy of Forebrain (Broadman Areas)	<b>The Nervous System: A. General Principles and Sensory Physiology</b> 1. Organization of the system 2. Sensory receptors 3. Somatic sensation: I. General organization, the tactile and position senses 4. Somatic sensation: II pain, headache and thermal sensations 5. Classification of nerve fibers	<b>METABOLISM OF LIPIDS</b> 1)Mobilization and transport of fatty acids, tricylglycerol, and sterols 2)Oxidation of fatty acids, Activation and transport of fatty acid in the mitochondria, fate of Acetyl CoA 3)regulation of B-oxidation, Other types of oxidation
Dissection/ Practicals	Ana-242 Ana-243	3. Gross Anatomy of Mid Brain 4. Cross Section of Mid Brain-I		
Problem Based Learning	Ana-244 Ana-245	5. Cross Section of Mid Brain-II  Dissection Videos Problems Based Learning		

<p>12 Week Classes</p> <p>Dissection/ Practicals</p> <p>Problem Based Learning</p>	<p>Ana-246</p> <p>Ana-247</p> <p>Ana-248</p> <p>Ana-249</p> <p>Ana-250</p> <p>Ana-251</p>	<ol style="list-style-type: none"> <li>1. Microscopic Features of Cerebrum</li> <li>2. Long Tracts of CNS-I</li> <li>3. Long Tracts of CNS-II</li> <li>4. Long Tracts of CNS-III</li> <li>5. CSF &amp; Ventricles</li> </ol> <p>Dissection Videos</p> <p>Problems Based Learning</p>	<ol style="list-style-type: none"> <li>1. Classification of Synapses and synaptic transmission</li> <li>2. Neurotransmitters and neuropeptides</li> <li>3. Types and functions of Sensory Receptors</li> <li>4. Sensory Path ways</li> <li>5. Types of pain and pain transmission</li> </ol>	<ol style="list-style-type: none"> <li>1) Ketogenesis</li> <li>2) Biosynthesis of fatty acids</li> <li>3) Eicosanoids, synthesis and functions</li> </ol>
<p>13 Weeks Classes</p> <p>Dissection/ Practicals</p> <p>Problems Based Learning</p>	<p>Ana-252</p> <p>Ana-253</p> <p>Ana-254</p> <p>Ana-255</p> <p>Ana-256</p>	<ol style="list-style-type: none"> <li>1. Development of Brain-II</li> <li>2. Microscopic Features of Midbrain</li> <li>3. Osteology of Orbit and Lacrimal Gland</li> <li>4. Eye-I</li> <li>5. Eye-II</li> </ol> <p>Dissection Videos</p> <p>Problems Based Learning</p>	<p><b>The Nervous System B. The Special Senses</b></p> <ol style="list-style-type: none"> <li>1. Visual Pathway Lesions of Visual Pathway</li> <li>2. Accommodation, Refractive Errors and visual acuity</li> <li>3. Photochemistry of Vision</li> <li>4. Dark and light adaptation</li> <li>5. Retinal Neuro-physiology</li> </ol>	<ol style="list-style-type: none"> <li>1) Triacylglycerol synthesis and regulation</li> <li>2) Synthesis and degradation of phospholipids .</li> <li>3) Cholesterol synthesis, regulation</li> </ol>

<p>14 Week Classes Dissection/ Practicals Problems Based Learning</p>	<p>Ana-257 Ana-258 Ana-259 Ana-260</p>	<p>1. Development of Spinal Cord 2. Oral Cavity-I 3. Oral Cavity-II 4. Ear-I 5. Ear-II Dissection Videos Problems Based Learning</p>	<p>1. The chemical senses I : Taste 2. The chemical senses II: Smell 3. External and Middle Ear 4. Cochlea and Theories of Hearing 5. Auditory Pathway &amp; Deafness</p>	<p>1) Hypercholesterolemia, Atherosclerosis 2) Plasma Lipoproteins, VLDL, LDL, HDL, and Chylomicrons synthesis and functions 3) Lipoprotein importance in health and disease Glycolipids metabolism</p>
<p>15 Week Classes Dissection/ Practicals Problem Based Learning</p>	<p>Ana-261 Ana-262 Ana-263</p>	<p>1. Microscopic Features of Cerebellum 2. Cranial Nerves-I (CN-III) 3. Cranial Nerves-II(CN-V) 4. Cranial Nerves-III(CN-7) 5. Cranial Nerves-IV(CN-V) Dissection Videos Problems Based Learning</p>	<p><b>The Nervous System: C. Motor and Integrative Neurophysiology</b> 1. Reflexes- Classification and pathway 2. Stretch Reflex, Muscle Spindle and muscle tone 3. Motor pathway (Pyramidal / Extra pyramidal) 4. Motor cortex, brain stem nuclei 5. Cerebellum, connection and functions-I</p>	<p>Metabolism of Proteins and Amino Acids: 1) Amino acid oxidation, metabolic fates of amino acid, 2) Transamination, deamination decarboxylation, 3) deamination and Transamination Different Tissues:</p>

<p>16 Week Classes</p> <p>Dissection/ Practicals</p> <p>Problems Based Learning</p>	<p>Ana-264</p> <p>Ana-265</p> <p>Ana-266</p> <p>Ana-267</p>	<ol style="list-style-type: none"> <li>1. Gross Anatomy of Hind Brain</li> <li>2. Cross-section of Cerebellum, Pons, Medulla-I</li> <li>3. Cross-section of Cerebellum, Pons, Medulla-II</li> <li>4. Scalp</li> <li>5. Face</li> </ol> <p>Dissection Videos</p> <p>Problems Based Learning</p>	<ol style="list-style-type: none"> <li>1. Cerebellum, connection and functions- II &amp; Disorders</li> <li>2. Vestibular apparatus &amp; regulation of equilibrium</li> <li>3. Basal Ganglia, connections &amp; functions-I</li> <li>4. Lesions of basal ganglia - Parkinsons disease</li> <li>5. Cerebral Cortex and specific cortical areas of brain</li> </ol>	<ol style="list-style-type: none"> <li>1) Transport of amino group, 2) role of Pyridoxal phosphate, Glutamate, Glutamine, Alanine</li> <li>3) Ammonia intoxication,</li> </ol>
<p>17 Week Classes</p> <p>Dissection/ Practicals</p> <p>Problem Based Learning</p>	<p>Ana-268</p> <p>Ana-269</p> <p>Ana-270</p>	<ol style="list-style-type: none"> <li>1. Cranial Cavity-I</li> <li>2. Cranial Cavity-II</li> <li>3. Temporomandibular Joint</li> <li>4. Nose</li> <li>5. Paranasal Sinuses</li> </ol> <p>Dissection Videos</p> <p>Problems Based Learning</p>	<ol style="list-style-type: none"> <li>1. Intellectual Functions of Brain</li> <li>2. Learning &amp; physiology of memory</li> <li>3. Behavior and Motivation Functions of brain</li> <li>4. Limbic System and Hypothalamus – I</li> <li>5. Limbic System and Hypothalamus- II</li> </ol>	<ol style="list-style-type: none"> <li>1) Nitrogen excretion and Urea formation,</li> <li>2) Urea cycle and its regulation,</li> <li>3) genetic defects of Urea cycle</li> </ol>

18 Week Classes	Ana-271 Ana-272	1. Triangles of the Neck 2. Larynx-I 3. Larynx-II 4. Pharynx 5. Blood Vessels & Lymph Drainage of the Neck	1. Functions of Hippocampus, Amygdala & limbic cortex 2. Pain and brain analgesia system 3. Sleep and Brain waves (EEG) 4. Autonomic Nervous System- I 5. Cerebrospinal Fluid & its Abnormalities (Hydrocephalus)	1) Functions, pathways of amino acid degradation 2) genetic disorders of individual amino acids  3) Integration and regulation of Metabolic Pathways in
Dissection/ Practical	Ana-273 Ana-274			
Problem Based Learning	Ana-275	Dissection Videos Problems Based Learning		
<b>19Week</b>		<b>2<sup>nd</sup> stage</b>	<b>2<sup>nd</sup> stage</b>	<b>2<sup>nd</sup> stage</b>
20 Week Classes	Ana-276	1. Development of thyroid & Parathyroid 2. Microscopic features of Thyroid & Parathyroid 3. Thyroid & Parathyroid Glands-I 4. Thyroid & Parathyroid Glands-II 5. Thyroid & Parathyroid Glands-III	<b>Endocrinology and Reproduction</b> 1. Introduction to endocrinology 2. Pituitary hormones and their control by the hypothalamus 1 3. Pituitary hormones and their control by the hypothalamus 2 4. Thyroid metabolic hormones 1 <b>5. Thyroid metabolic hormones</b> 1	<b>BIOCHEMISTRY OF ENDOCRINE SYSTEM</b> 1) Chemistry, classification Secretion, 2) Mechanism of action -I, 3) Mechanism of action –II
Dissection/ Practicals	Ana-277			
Problem Based Learning	Ana-278	Dissection Videos Problems Based Learning		

<p>21 Week Classes</p> <p>Dissection/ Practicals</p> <p>Problem Based Learning</p>	<p>Ana-279</p> <p>Ana-280</p> <p>Ana-281</p>	<p>1. Microscopic features of endocrines I</p> <p>2. Development of Pituitary Gland</p> <p>3. Microscopic Features of Gland</p> <p>4. Gross Anatomy of Pituitary Gland</p> <p>5. Microscopic features of endocrines II</p> <p>Dissection Videos</p> <p>Problems Based Learning</p>	<p>1. Adrenocortical hormones 1</p> <p>2. Adrenocortical hormones 2</p> <p>3. Adrenocortical hormones 3</p> <p>4. Insulin, glucagons and diabetes mellitus 1</p> <p>5. Insulin, glucagons and diabetes mellitus 2</p>	<p>1) regulation of hormone secretion</p> <p>2) Hypothalamic and posterior pituitary hormones</p> <p>3) anterior pituitary hormones-I</p>
<p>22 Week Classes</p> <p>Dissection/ Practicals</p> <p>Problem Based Learning</p>	<p>Ana-282</p> <p>Ana-283</p> <p>Ana-284</p> <p>Ana-285</p>	<p>1. Development of Male Genital Organs and Ducts</p> <p>2. Development of Male accessory Genital Glands</p> <p>3. Microscopic Features of Male Genital Organ/ducts I</p> <p>4. Microscopic Features of Male Genital Organ /Ducts II</p> <p>1. Development of Female Genitals Organs</p> <p>Dissection Videos</p> <p>Problems Based Learning</p>	<p>1. Insulin, glucagons and diabetes mellitus 3</p> <p>2. Parathyroid hormone</p> <p>3. Calcitonin, calcium and phosphate metabolism</p> <p>4. Vitamin D, bone, and teeth</p> <p>5. Reproductive and hormonal functions of the male 1</p>	<p>1) anterior pituitary hormones-II</p> <p>2) Thyroid and parathyroid hormones</p> <p>3) pancreatic hormones</p>

<p>23 Week Classes</p> <p>Dissection/ Practical</p> <p>Problem Based Learning</p>	<p>Ana-286</p> <p>Ana-287</p> <p>Ana-288</p>	<p>1. Development of Female Accessory Glands</p> <p>2. Microscopic Features of Female Genital Organ-I</p> <p>3. Microscopic Features of Female Genital Organ-II</p> <p>4. Microscopic Features of Female Genital Ducts</p> <p>Dissection Videos</p> <p>Problems Based Learning</p>	<p>1. Reproductive and hormonal functions of the male 2</p> <p>2. Function of the pineal gland</p> <p>3. Female physiology before pregnancy and female hormones 1</p> <p>4. Female physiology before pregnancy and female hormones 2</p> <p>5. Female physiology before pregnancy and female hormones 3</p>	<p>1) adrenal Medullary Hormones</p> <p>2) Steroid hormones (adrenal cortex)</p> <p>3) effect of hormones on metabolism</p>
<p>24 Week Class</p> <p>Dissection/ Practicals</p> <p>Problem Based Learning</p>	<p>Ana-289</p> <p>Ana-290</p> <p>Ana-291</p>	<p>1. Anatomy of Vagina</p> <p>2. Anatomy of Uterus</p> <p>3. Anatomy of Ovaries</p> <p>4. Osteology of Pelvis-I</p> <p>5. Osteology of Pelvis-II</p> <p>Dissection Videos</p> <p>Problems Based Learning</p>	<p>1. Pregnancy and lactation 1</p> <p>2. Pregnancy and lactation 2</p> <p>3. Pregnancy and lactation 3</p> <p>4. Fetal and neonatal physiology 1</p> <p>5. Fetal and neonatal physiology 2</p>	<p>1) carbohydrates , lipids, proteins, mineral and water</p> <p>MCQ &amp; SEQ/ Presentations by students</p>

<p>25 Week Classes</p> <p>Dissection/ Practicals</p> <p>Problem Based Learning</p>	<p>Ana-292</p> <p>Ana-293</p> <p>Ana-294</p>	<ol style="list-style-type: none"> <li>1. Prostate-I</li> <li>2. Prostate-II</li> <li>3. Walls &amp; Floor of Pelvic Cavity-I</li> <li>4. Walls &amp; Floor of Pelvic Cavity-II</li> <li>5. Walls &amp; Floor of Pelvic Cavity-III</li> </ol> <p>Dissection Videos</p> <p>Problems Based Learning</p>	<ol style="list-style-type: none"> <li>1. General principles &amp; classification of hormones</li> <li>2. Mechanism of action &amp; feedback control of hormones</li> <li>3. Second messenger System</li> <li>4. Female Ovarian Cycle</li> <li>5. Endometrial Cycle-I</li> </ol>	<p>METABOLISM OF NUCLEOTIDES/Biochemical Genetics</p> <p>Metabolism of Nucleotide:</p> <ol style="list-style-type: none"> <li>1) De Novo Purine synthesis</li> <li>2) Synthesis of Pyrimidine</li> <li>3) Recycling of purine and pyrimidine bases (The salvage pathway)</li> </ol>
<p>26 Week Classes</p> <p>Dissection/ Practicals</p> <p>Problem Based Learning</p>	<p>Ana-295</p> <p>Ana-296</p> <p>Ana-297</p>	<ol style="list-style-type: none"> <li>1. Neurovascular structure of Pelvis-I</li> <li>2. Neurovascular Structure of Pelvis-II</li> <li>3. Anatomy of The Penis</li> <li>4. Anatomy of Testis</li> </ol> <p>Dissection Videos</p> <p>Problems Based Learning</p>	<ol style="list-style-type: none"> <li>1. Endometrial Cycle-II</li> <li>2. Estrogen and Progesterone</li> <li>3. Puberty and menopause</li> <li>4. Fertilization and Placenta function</li> <li>5. Maternal Changes in Pregnancy &amp; Lactation</li> </ol>	<ol style="list-style-type: none"> <li>1) Degradation of purine, formation of Uric acid</li> <li>2) Disorders of purine nucleotide metabolism</li> <li>3) Biochemical Genetics (Informational Flow in the Cell):</li> </ol>

27 Week Classes			Revision/Presentations by students	<ul style="list-style-type: none"> <li>1) The structural basis of the cellular information</li> <li>2) DNA, Chromosomes, Discovery and organization of DNA in Genomes</li> <li>3) Super coiling of DNA</li> <li>1) The replication of DNA (DNA dependant DNA synthesis) <ul style="list-style-type: none"> <li>- DNA polymerase, its components and functions</li> <li>- Initiation, elongation and termination of Replication</li> <li>- DNA Repair, Mutation and Cancers</li> </ul> </li> <li>2) The Transcription (DNA dependant RNA synthesis) <ul style="list-style-type: none"> <li>- RNA polymerase, its components and functions</li> <li>- Initiation, elongation and termination of transcription</li> <li>- RNA processing</li> <li>- RNA dependant synthesis of RNA and DNA</li> <li>- Reverse transcription — DNA synthesis from Viral RNA</li> <li>- Retroviruses in relation to Cancer and AIDS</li> </ul> </li> <li>3) The Translation (Protein Synthesis) <ul style="list-style-type: none"> <li>- The genetic codes and their characteristics</li> <li>- Initiation, elongation and termination of protein synthesis</li> <li>- Post-translational modification</li> <li>- Regulation of Gene Expression</li> </ul> </li> <li>1) Molecular biology technology <ul style="list-style-type: none"> <li>- DNA isolation</li> <li>- DNA-recombinant technology</li> <li>- Hybridization, blotting techniques</li> </ul> </li> <li>2) Genetic disorders</li> </ul>
Dissection/ Practicals	Ana-298	01.Urogenital Diaphragm-I 02.Urogenital Diaphragm-II 03.Revision Classes		
Problem Based Learning	Ana-299	Dissection Videos Problems Based Learning		
<b>28</b>		<b>3<sup>rd</sup> stage</b>	<b>3<sup>rd</sup> stage</b>	<b>3<sup>rd</sup> stage</b>
		Preparations for annual examination		

