

## الخطه الدراسيه لقسم الكيمياء الحيويه السريره:

يشارك القسم باقى اقسام الكليه فى تدريس برنامج الطب والجراحه من خلال تدريسه منفردا لبعض المقررات او المشاركه فى تدريس مقررات اخرى

يقوم القسم بتدريس المقررات الاتيه:

❖ مقرر الكيمياء الحيويه-1

❖ مقرر الكيمياء الحيويه-2

❖ الوراثة الطبيه

يشارك القسم باقى اقسام الكليه فى تدريس المقررات الاتيه

❖ مودبول الجهاز العضى والعظمى

❖ مودبول الجهاز العصبى

❖ مودبول الجهاز التنفسى

❖ مودبول المناعة والدم

❖ مودبول الجهاز التناسلى

❖ 8-مودبول الغدد الصماء

❖ مودبول الجهاز البولى

❖ مودبول الجهاز الهضمى

❖ مودبول طب المختبرات

المحتوى العلمى للقسم فى جميع المقررات:

**Biochemistry I (1211211)**

الكيمياء الحيويه-1

<b>Topic</b>	<b>Total CH</b>
<b>Classification of carbohydrates</b>	<b>2</b>
<b>Structure of monosaccharaides</b>	
<b>Isomerism - Derived sugars</b>	<b>2</b>
<b>Disaccharides – Polysaccharides</b>	<b>2</b>
<b>Amino acids Classification &amp; Properties &amp; structure of amino acids &amp;</b>	<b>2</b>
<b>Higher orders of proteins and folding process</b>	<b>2</b>
<b>Classification of proteins</b>	<b>2</b>
<b>Globular proteins: HB &amp; myoglobin</b>	<b>2</b>
<b>Fibrous proteins</b>	<b>2</b>
<b>Simple lipids</b>	<b>2</b>
<b>Phospholipids- Glycolipids</b>	<b>2</b>
<b>Lipoproteins - Steroids</b>	<b>2</b>
<b>Chemical nature of the enzymes &amp; classification</b>	<b>2</b>
<b>Mechanism of enzymes action</b>	<b>2</b>
<b>Factors affecting rate of enzyme action</b>	
<b>Regulation of enzyme activities- Enzyme inhibition</b>	<b>2</b>
<b>Enzymes in Clinical Diagnosis- isozymes</b>	<b>2</b>
<b>Nucleotides- DNA structure &amp; DNA organization.</b>	<b>2</b>
<b>DNA replication</b>	<b>2</b>
<b>DNA damage &amp; repair</b>	<b>2</b>
<b>Transcription</b>	<b>2</b>
<b>Genetic code &amp; mutation</b>	<b>2</b>

<b>Protein synthesis Posttranslational modification</b>	<b>2</b>
<b>Regulation of gene expression</b>	<b>2</b>
<b>DNA recombinant technology &amp; applications</b>	<b>2</b>
<b>Fat soluble vitamins I</b>	<b>2</b>
<b>Fat soluble vitamins II</b>	<b>2</b>
<b>Water vitamins I</b>	<b>2</b>
<b>Water vitamins II</b>	<b>2</b>
<b>Water vitamins III- mineral I</b>	<b>2</b>
<b>Minerals II</b>	<b>2</b>
<b>Bioenergetics: Redox chain I</b>	<b>2</b>
<b>Bioenergetics: Redox chain II&amp; Cell membrane</b>	<b>2</b>
<b>Practical Unknown solution</b>	<b>2</b>
<b>Practical HPLC &amp; isozymes</b>	<b>2</b>
<b>Practical calcium</b>	<b>2</b>
<b>Practical DNA extraction</b>	<b>2</b>
<b>PCR &amp; electrophoresis</b>	<b>2</b>

**Biochemistry II (1211212)**

الكيمياء الحيويه-2

<b>Topic</b>	<b>Total CH</b>
<b>Digestion &amp; absorption &amp; Introduction to metabolism &amp; Signal transduction</b>	<b>2</b>
<b>Glycolysis</b>	<b>2</b>
<b>Citric acid cycle &amp; Gluconeogenesis</b>	<b>2</b>
<b>Glycogen metabolism</b>	<b>2</b>
<b>Pentose phosphate pathway</b>	<b>2</b>
<b>Monosaccharides metabolism, Uronic acid</b>	
<b>Regulation of blood glucose level (tissue, hormonal).</b>	<b>2</b>

<b>Diabetes mellitus, hyperglycemia &amp; hypoglycemia</b>	<b>2</b>
<b>Digestion &amp; absorption &amp; Lipolysis</b>	<b>2</b>
<b>FA synthesis</b>	<b>2</b>
<b>Lipogenesis</b>	<b>2</b>
<b>Ketogenesis &amp; Phospholipids metabolism</b>	<b>2</b>
<b>Cholesterol synthesis, regulation &amp; Bile acids</b>	<b>2</b>
<b>Lipoprotein metabolism</b>	<b>2</b>
<b>Fatty liver &amp; Eicosanoids metabolism</b>	<b>2</b>
<b>Digestion &amp; absorption protein turnover, nitrogen balance</b>	<b>2</b>
<b>Transamination, deamination &amp; Urea cycle</b>	<b>2</b>
<b>Glycine, alanine, serine &amp; threonine</b>	<b>2</b>
<b>Cysteine &amp; methionine &amp; Branched chain amino acids Basic &amp; acidic amino acids</b>	<b>2</b>
<b>Basic &amp; acidic amino acids Aromatic amino acids &amp; tryptophan</b>	<b>2</b>
<b>Purine metabolism</b>	<b>2</b>
<b>Pyrimidine metabolism</b>	<b>2</b>
<b>Spectrophotometer &amp; Estimation of blood glucose</b>	<b>2</b>
<b>GTT and HbA1C Estimation</b>	<b>2</b>
<b>Practical ; lipid profile</b>	<b>2</b>
<b>Urea, creatinine and uric acid estimation</b>	<b>2</b>
<b>Plasma total protein , albumin Protein Electrophoresis</b>	<b>2</b>

## Modules

<b>Module</b>	<b>Lectures</b>
<b>Endocrine</b>	1. Mechanism of hormonal action I
	2. Mechanism of hormonal action II
	3. Pituitary hormone
	4. Synthesis of Thyroxin
	5. Parathyroid hormones
	6. Synthesis & catabolism of adrenal medulla hormones
	7. Synthesis & catabolism of adrenal cortical hormones
	8. Insulin and glucagon
<b>Reproductive module</b>	1. Testicular steroidogenesis
	2. Female sex hormones
	3. Semen analysis & ( practical)
<b>GIT module</b>	1. Liver function & tests
	2. Role of liver in detoxication.
	3. Liver function tests (practical)
<b>CNS module</b>	1. Neurotransmitters
	2. Oxidative stress and neurodegenerative diseases
	3. Brain metabolism
	4. CSF analysis ( practical)
<b>Laboratory module</b>	1. Water and electrolyte Balance & disorders of Na, k
	2. Laboratory changes in renal diseases
	3. Thyroid Disorders and its assessment
	4. Adrenocortical Disorders and its assessment
	5. Liver disorders and its assessment
	6. Calcium Disorders assessment
	7. Bone Disease assessment
	8. Pituitary disorders and its assessment
	9. DM
	10. MI
	11. RFTs & LFTs (practical)
	12. DM & MI (practical)
	13. Thyroid FTs (practical)
	14. C/P (renal function tests)

<b>MSK module</b>	<b>Biochemical composition of muscle: role of proteins in muscle contraction</b>
	<b>Sources of energy for muscle contraction.</b>
<b>Respiratory mod</b>	<b>1. Acid base balance</b>
	<b>2. ABG (practical)</b>
<b>IBL module</b>	<b>1. Red blood cells metabolism</b>
	<b>2. Hb formation &amp; porphyria</b>
	<b>3. Hb catabolism &amp; jaundice</b>
<b>Urinary</b>	<b>Metabolic functions of kidney &amp; Renal assessment</b>
	<b>Pathological Constituents of urine</b>
	<b>Types of renal Stone</b>
	<b>Practical 1: Renal function tests</b>
	<b>Practical 2: Urine analysis</b>

**Medical genetics (1211411)=one CH**

<b>Title</b>	<b>Hours</b>
<b>Nucleic acids Biochemistry</b> <ul style="list-style-type: none"> <li>• DNA replication and organization</li> <li>• Transcription (RNA synthesis)</li> <li>• Translation (Protein synthesis)</li> <li>Regulation of gene expression</li> </ul>	<b>2</b>
<b>Chromosomes</b> <ul style="list-style-type: none"> <li>• Structure of chromosomes</li> <li>• Mitosis and Meiosis</li> <li>• Karyotyping</li> <li>• Numerical chromosomal abnormalities</li> <li>• Methods of inheritance (Mendalions and non Mendalians)</li> </ul>	<b>2</b>
<b>Mutation</b> <ul style="list-style-type: none"> <li>• Types of mutations</li> <li>• Clinical application (Hemoglobinopathies)</li> <li>• Genotypes and Phenotypes</li> </ul>	<b>2</b>
<b>Recombinant DNA Technology</b> <ul style="list-style-type: none"> <li>• Restriction Endonucleases and Vectors</li> <li>• Gene cloning</li> <li>• Transgenic animals, gene therapy and cell-based therapy</li> </ul>	<b>2</b>

<p><b>Probes</b></p> <ul style="list-style-type: none"> <li>• Preparation of different probes</li> <li>• Applications of probes in</li> <li>• Forensic medicine</li> <li>• Prenatal diagnosis</li> <li>• Genetic screening in infants and pregnant women</li> <li>• Pedigree analysis</li> </ul>	<b>2</b>
<p><b>Molecular Basis of Cancer</b></p> <ul style="list-style-type: none"> <li>• Genes of cancer (Oncogenes and tumor suppressors)</li> <li>• Mechanism of cancer</li> <li>• Apoptosis and cell death</li> </ul>	<b>2</b>
<ul style="list-style-type: none"> <li>• Western, Southern and northern blotting</li> <li>• DNA sequencing and microarrays</li> <li>• Karyotyping</li> <li>• FISH technique</li> </ul>	<b>2x2</b>
<ul style="list-style-type: none"> <li>• DNA fingerprinting and paternity problems</li> </ul>	<b>1</b>
<ul style="list-style-type: none"> <li>• Gene therapy and transgenic animals</li> </ul>	<b>1</b>