

12	<p>Enzymes 281</p> <p>Enzyme classification and nomenclature</p> <p>Measurement of enzyme activity. Calculation of enzyme activity.</p> <p>Enzymes of clinical significance:</p> <p>Creatine kinase (CK). Lactic acid dehydrogenase (LDH).</p> <p>Aspartate aminotransferase (AST). Alanine aminotransferase (ALT).</p> <p>Alkaline phosphatase (ALP). Acid phosphatase (ACP).</p> <p>γ-Glutamyltransfease (γ-GT). Amylase (AMS), Lipase (LPS).</p> <p>Glucose- 6 – phosphate dehydrogenase (G-6-PD).</p>
13	<p>Carbohydrates 309</p> <p>Regulation of carbohydrates metabolism. Hyperglycemia: Diabetes mellitus</p> <p>Classification of diabetes. Criteria for the diagnosis of diabetes mellitus. Hypoglycemia.</p> <p>Methods of glucose measurements. Glycosylated hemoglobin: HbA_{1c} (A_{1c})</p>
14	<p>Lipids & Lipoproteins 328</p> <p>General lipoprotein structure & characteristics of the major human lipoproteins:</p> <p>Chylomicrons. Very-Low-Density-Lipoproteins. Low-Density-Lipoproteins.</p> <p>Lipoprotein (a). High-Density-Lipoproteins.</p> <p>Characteristics of the major human apolipoproteins.</p> <p>Lipoprotein physiology & metabolism</p> <p>Hyperlipoproteinemia. Hypercholesterolemia. Hypertriglyceridemia:</p> <p>Coronary heart disease. Arteriosclerosis. Atherosclerosis.</p> <p>Lipid & Lipoprotein Analysis: Measurement</p>
15	<p>Electrolytes 356</p> <p>Sodium (Na⁺). Potassium (K⁺). Chloride (Cl⁻). Bicarbonate (HCO₃⁻).</p> <p>Magnesium (Mg⁺⁺). Calcium (Ca⁺⁺). Phosphate.</p>
16	<p>Blood gases, pH, & Buffer systems 384</p> <p>Regulation of Acid-Base Balance: Lungs & Kidneys</p> <p>Acidosis. Alkalosis. Blood gas analysis: pH. pCO₂. pO₂.</p>
19	<p>Introduction to Hormones & Pituitary Function 445</p>
24	<p>Liver Function 516</p> <p>Excretory & Secretory Function: Bilirubin Analysis</p> <p>Enzyme Tests in Liver Disease: ALP. AST. ALT. 5'-Nucleotidase.</p> <p>γ-GT. Leucine aminopeptidase. LDH. Hepatitis.</p>
25	<p>Cardiac Function: 541</p> <p>Diagnosis of Heart Disease-Laboratory Diagnosis of Myocardial Infarction</p> <p>ECG. Cardiac biomarker. Enzymes: CK, CK (CK-MB). Cardiac proteins: Troponin C, Troponin T, Troponin I, & Myoglobin.</p> <p>Markers of Inflammation & Coagulation Disorders:</p> <p>Hs-CRP, Fibrinogen, D-Dimer.</p> <p>Markers of Congestive Heart Failure: Natriuretic peptides (PNs) i.e. Brain-type, or B natriuretic peptide (BNP). Other Markers: Glycogen phosphorylase BB, Heart Fatty Acid-Binding Protein, Carbonic anhydrase III, Ischemic-modified albumin, & Homocysteine.</p>
26	<p>Renal Function 557</p> <p>Kidney Function Test: Analytic Procedures</p> <p>Clearance measurements, Creatinine, Creatinine clearance & GFR, Urea.</p> <p>Urine Electrophoresis: β_2-Microglobulin, Myoglobin, Microalbumin, Cystatin C.</p> <p>Urinalysis. Glomerular Diseases.</p>
27	<p>Pancreatic Function and Gastrointestinal Function 578</p> <p>Lactose tolerance test. D-xylose absorption test, Fecal fat analysis.</p>

- 31 Circulating Tumor Markers: Basic Concepts & Clinical Applications 637
 Types of tumor markers. Common cancer terms. Enzyme tumor markers, Serum protein tumor markers. Endocrine tumor markers. Use of serum AFP & HCG for testicular cancer classification. Carbohydrate and cancer antigen tumor markers. Receptor tumor markers. Immunohistochemistry. Enzyme assays. Frequently Ordered Tumor Markers: α -Fetoprotein (AFP). Cancer Antigen 125 (CA 125). Carcinoembryonic Antigen (CEA). Human Chorionic Gonadotropin (HCG). Prostate Specific Antigen (PSA).

Clinical Laboratory

<u>Week No</u>	<u>Title of Test</u>
1	Check in & Introduction to lab techniques, blood sampling preparation of reagents.
2	Measurement of total protein & albumin in serum.
3	Measurement of urea & creatinine in serum.
4	Measurement of bilirubin in serum
5	Assay of LDH in serum.
6	Assay of ALP & ACP activities in serum
7	Assay of ALT & AST activities in serum
8	Measurement of glucose & uric acid in serum.
9	Measurement of cholesterol in serum + HDL + Triglyceride
10	Assay of Amylase & Lipase in serum,
11	Assay of HbA1c in blood.
12	Measurement of Na & K in serum by flame photometry.
13	Qualitative measurements of urinary glucose, proteins, bilirubin, urobilinogen, nitrite, ascorbic acid, & pH.
14	Measurement of Ca & Pi in serum
15	Measurement of Fe & total iron binding capacity (TIBC) in serum.
16	Final written lab Exam

Grading System:

First exam = 20%: 15% for lectures plus 5 % for lab written exam given together with the lecture written exam.

Lab quizzes and lab reports will have 5%.

Written Midterm Exam = 30%: 22.5% for the lectures & 7.5% for the written midterm lab, given as one unit.

Written Final Exam = 50%: 37.5% for the 2h lectures exam & 12.5% for the 1h final lab exam.