Course Code: MLE402 **Course Title: Clinical Biochemistry II**
Number of Credits: 3T + 2P = 5
Effective from AY: 2022 -2023

Prerequisite for the Course:	Basic knowledge of cell biology and biochemistry.	
Objectives:	• Testing, observing and analyzing blood function test • Knowledge about the Clinical aspects and use of it during a performance of test.	
Content:	**Module 1: Carbohydrate, Protein, Lipid Metabolism** Carbohydrate Digestion, Absorption & Metabolism: Digestion & Absorption of Carbohydrates, Glycolysis, TCA cycle, Gluconeogenesis, Glycogen Metabolism, DM, Ketosis, Blood Glucose and its regulation; Hypoglycemia	9hrs
	Lipid Digestion, Absorption & Metabolism: Digestion & Absorption of Lipids, ketone body metabolism, lipoprotein metabolism, Atherosclerosis, Normal Lipid profile	9hrs
	Protein Digestion, Absorption & Metabolism: Digestion & Absorption of Proteins, Transamination, Deamination, Urea cycle, Functions of Glycine Phenylalanine,Tyrosine, Tryptophan, Phenylketonuria, Alkaptonuria,Albinism, Maple syrup urine disease, Kwashiorkar & Marasmus	9hrs
	Water & Electrolyte Balance: Electrolyte balance (Na, K & Cl) and Imbalance	2hrs
	Module 2: Function Tests 1 Cardiac Function Tests: Cardiac Markers, tests used to estimate risk of CVD	2hrs
	Gastric Function Tests: Gastric function and HCL secretion, Gastric juice analysis	2hrs
	Module 3: Function Tests 2 Liver Function Tests: Tests based on excretory, detoxification, synthetic functions of liver, Enzymes in diagnosis of liver diseases	4hrs
	Pancreatic Function Tests: Pancreatic juice, functions, Assessment of Pancreatic functions	1hr
	Thyroid Function Tests: Thyroid gland functions, Classification of thyroid function tests	1hr

	Kidney Function Tests: Glomerular and Tubular functions, Normal and Abnormal constituents of Urine, Renal clearance tests, Tests for tubular functions	3hrs
	Viva/Tutorial/ Small Group Discussion: All above topics	3hrs
	Practical Module:	
	• Chemistry of gastric juice	4hrs
	• Demonstration: Quality Control	4hrs
	• Estimation of bilirubin	4hrs
	• Estimation of glucose in blood	4hrs
	• Estimation of serum proteins	4hrs
	• Estimation of blood urea	4hrs
	• Estimation of creatinine in blood	4hrs
	• Estimation of uric acid in blood	4hrs
	• Normal urine	4hrs
	• Full urine report	4hrs
	• Demonstration: Kidney function tests, Thyroid function tests	4hrs
	• Demonstration: Liver function tests,Cardiac function tests	4hrs
	• Demonstration: Lipid Profile	4hrs
	• Demonstration: C. S. F. Examination	4hrs
	• Revision	4hrs
Pedagogy:	Lectures/tutorials/assignments/ Presentations/Practicals/ demonstrations.	
Learning Outcome:	By the end of this course, students will be able to 1. Understand and explain clinical significance of metabolism of biomolecules. 2. Explain the significance of function tests of body systems. 3. Perform Chemical examination of body fluids. CO4: Conduct Liver, Thyroid and Kidney function tests.	
References	1. Lieberman MA and Ricer R(2019). BRS Biochemistry, Molecular Biology, and Genetics.Wolter Kulver Publication. 2. Nelson DL and Cox MM(2019). LehningerPrinciples of Biochemistry, Seventh edition. Wiki publications. 3. Panini RS(2013).Medical biochemistry – an illustrated review. Thieme Medical Publishers, New York. 4. Vasudevan DM(1995): Textbook of Biochemistry for medical student's first edition: Jaypee Brothers Medical Publishers Pvt Ltd, New Delhi. 5. Pankaja Naik. (Latest edition). Medical Biochemistry. 6. Sood R (1999) fifth edition: Medical Laboratory Technology, Jaypee Brothers Medical Publishers Pvt Ltd, New Delhi. 7. Chatterjee MN (2013): Textbook of Medical Biochemistry eight edition: Jaypee Brothers Medical Publishers Pvt Ltd, New Delhi.	

	REFERENCE BOOKS FOR PRACTICALS: 8. Mukherjee KL (2017) Volume II:Medical Laboratory Technology,Tata McGraw-Hll Publishing Company Ltd. New Delhi. 9. Kamat G(2011). Practical manual of Hematology. Jaypee Brothers Medical Publishers Pvt Ltd, New Delhi.	