Course Title	Biochemistry II				
Course Code	BMS221				
Course Type	Compulsory				
Level	Bachelor (1st Cycle)				
Year / Semester	2nd Year / 4th Semester				
Teacher's Name	TBA				
ECTS	8	Lectures / week	3 Hours	Laboratories / week	3 Hours
Course Purpose and Objectives	The objective of the course is to familiarize students with the relationship of the biochemical pathways with the pathophysiology of diseases and the application of biochemical diagnostic procedures.				
Learning Outcomes	Upon successful completion of this course students should be able to: • Analyse and evaluate the biochemical processes as the fundamental basis of life and of all vital processes and functions in the human body. • Discuss the biosynthetic pathways and metabolism of amino acids, fatty acids and protein synthesis • Describe the role of hormones and their relationship to disease processes • Explain the metabolism of lipids in health and disease • Describe the fundamentals employed in designing the principal biochemical techniques, especially those most utilized for diagnosis (e.g. electrophoresis, ELISA, etc.).				
Prerequisites	BMS214	Co-requisites	None		
Course Content	**Course description** **Theory** • Metabolic changes in pathophysiological processes. • Oxidation and biosynthesis of fatty acids and metabolism of lipids • Biosynthesis of membrane lipids and steroid hormones • Biosynthesis of amino acids, nucleotides and nucleic acids • Protein synthesis • Hormones, hormonal action and the biochemical processes of the hypothalamus, pituitary, thyroid, parathyroids and adrenal glands				

	• Glucose metabolism, insulin resistance and, metabolic syndrome • Metabolism of fats and hyperlipidaemia • Functional biochemistry • Laboratory evaluation of liver function, of tumor markers and of muscle fiber-myocardial infarcts. **Laboratory Exercises** • Amino acid composition of a dipeptide by enzymatic proteolysis and paper chromatography • Amino acid properties i.e. detection of tryptophan, detection of the peptide bond (biuret test) • Assessment of the amphoteric properties of proteins • Properties of proteins in solutions (i.e. protein precipitation with concentrated salt solutions-salting out method) • Carbohydrate analysis (Overall reaction to sugars -test with α-naphthol, reducing tests such as Fehling's test and Benedict's test, iodine test in starch • Enzymatic synthesis and hydrolysis of starch • Lipid isolation and analysis • Extraction of lecithin from egg yolk, chemical composition analysis of lecithin (detection of fatty acids, choline, phosphorus) • Detection of fat-soluble vitamins
Teaching Methodology	Face- to- face
Bibliography	Textbook of Biochemistry with Clinical Correlations; Devlin, Thomas M.; 7th; 978-0470281734; John Wiley; 2010 Biochemistry: International Edition; Berg, J.M. , Tymoczko, J.L., Stryer **ADDITIONAL RECOMMENDED TEXTBOOKS:** Introduction to modern biochemistry, by P. Karlson Clinical Biochemistry: Metabolic and Clinical Aspects; Marshall William; 2nd; 978-0443101861; Churchill Livingstone; 2008 Lehninger Principles of Biochemistry; David L. Nelson; 978-1429208925; W. H. Freeman; 2008 Harpers Illustrated Biochemistry; Harper, H./Robert, K. Murray; 29th; 978-0071765763; McGraw-Hill; 2012

Assessment	Mid – Term Examination 30% Final Examination 40% Assignments/Lab 20% Class Participation 10% 100%
Language	English