

Course Title	Clinical Chemistry				
Course Code	BMS422				
Course Type	Compulsory				
Level	Bachelor (1st Cycle)				
Year / Semester	4 <sup>th</sup> Year / 8 <sup>th</sup> Semester				
Teacher's Name	TBA				
ECTS	7	Lectures / week	3 Hours	Laboratories / week	2 Hours
Course Purpose and Objectives	The course aims to provide knowledge about the connection between patient, tests and the clinical diagnostic laboratory's importance in the daily activities in healthcare.				
Learning Outcomes	<p>Upon completion of the course the student will be able to:</p> <ul style="list-style-type: none"> <li>• demonstrate good skills in the relevant laboratory methodology (i.e. perform good quality control measures and proper specimen collection and handling techniques)</li> <li>• carry out blood sampling</li> <li>• explain and evaluate the connection between patient, patient examinations and clinical chemistry diagnostics in different diseases</li> <li>• evaluate analysis results by means of controls and reference ranges</li> <li>• state whether results are within the reference range and explain the correct use of reference intervals while identifying possible factors affecting them</li> <li>• identify and explain various physiological and analytical causes of variability in results on patient laboratory tests.</li> <li>• state sources of error during analysis and methods to minimize or eliminate these errors.</li> <li>• interpret the meaning of laboratory tests and assess their significance in patient disease states</li> </ul>				
Prerequisites	CHE104, BMS121, BMS214, BMS221	Co-requisites	None		
Course Content	<p>The following fields will be covered during the course:</p> <p><b>Theory:</b></p> <ul style="list-style-type: none"> <li>• Clinical chemistry diagnostics of the most common disorders in different organ systems</li> <li>• The principles of pharmaceutical effects, metabolism in the body and the factors that influence these. Principles of drug analysis and addiction analysis.</li> </ul>				

	<ul style="list-style-type: none"> <li>• Laws and regulations within healthcare</li> <li>• Guidelines for specimen collection and processing</li> <li>• Quality Control and Statistics</li> <li>• Analytical Techniques and Instrumentation</li> <li>• Automated Techniques</li> <li>• Amino Acids and Proteins, Enzymes</li> <li>• Blood Gases, pH, and Buffer Systems, Electrolytes</li> <li>• Carbohydrates and Alterations in Glucose Metabolism</li> <li>• Lipids and Lipoproteins</li> <li>• Thyroid Function analysis</li> <li>• Pancreatic Function analysis</li> <li>• Therapeutic drug monitoring</li> </ul> <p><b>Laboratory</b></p> <ul style="list-style-type: none"> <li>• Basic Principles (weighing and measurements)</li> <li>• Reagent preparation and use</li> <li>• Instrumentation (spectrophotometry, electrophoresis, automated analyzer)</li> <li>• Colourimetric titration</li> <li>• End point analysis, Kinetic measurements</li> <li>• Amino Acids and Proteins, Total Protein</li> <li>• Enzymes (i.e. Creatine Kinase, CK-MB, Lactate Dehydrogenase, Aspartate Aminotransferase, Alanine Aminotransferase, Alkaline Phosphatase, Acid Phosphatase, Gamma-Glutamyltransferase)</li> <li>• Electrolytes (Sodium, Potassium, Chloride)</li> <li>• Carbohydrates (Glucose, Glycosylated Hemoglobin)</li> <li>• Lipids and Lipoproteins (Cholesterol, triglyceride, HDL, VLDL, LDL)</li> <li>• Urea (uric acid, ammonia)</li> <li>• Liver Function (Total Bilirubin, Direct Bilirubin)</li> <li>• Pancreatic Function (Amylase, Lipase)</li> </ul>
Teaching Methodology	Face- to- face
Bibliography	<p>Kaplan LA, and Pesce AJ Clinical Chemistry, 3<sup>rd</sup> edition</p> <p>Burtis CA and Bruns DE. Tietz Fundamentals of Clinical Chemistry and molecular diagnostics, 7<sup>th</sup> edition</p>

Assessment	<table border="1"><tr><td>Mid – Term Examination</td><td>30%</td></tr><tr><td>Final Examination</td><td>40%</td></tr><tr><td>Assignments/Lab</td><td>20%</td></tr><tr><td>Class Participation</td><td>10%</td></tr><tr><td></td><td>100%</td></tr></table>	Mid – Term Examination	30%	Final Examination	40%	Assignments/Lab	20%	Class Participation	10%		100%
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Language	English										