

Course Overview

Course code :	LMT402
Course title:	Biochemistry II
Level/semester:	(Fourth Semester)
Preceding Courses & Main Subjects	chemistry I
Credit hours: 4	Theoretical: 3
	Practical: 2

Learning Outcomes	<p>Understand safety measures regarding handling body fluids.</p> <ul style="list-style-type: none"> -Know origin and anatomy relationships of body fluids 1. -Know formation and abnormal accumulation of body fluids -Know Types of body fluids -Understanding the forces involved in fluid formation in the body and correlate the body cavity with containing fluid 1. -Know routine analysis of body fluids <p>Understand composition and function of synovial fluid</p> <ul style="list-style-type: none"> 1. -Know the techniques and methods used in the synovial fluid analysis processes. 2. Know synovial fluid chemical analysis as a known case <p>Understand composition and function of amniotic fluid</p> <p>Know the techniques and methods used in the amniotic fluid analysis processes</p> <p>Know other case Studies for serous fluids: Pleural, Pericardial and Peritoneal.</p> <ul style="list-style-type: none"> 1. -Understanding composition and function techniques and methods used in the analysis processes of serous different fluids. <ul style="list-style-type: none"> -Understand composition and function of CSF -Understand techniques of specimen collection. -Know anatomy of CSF location and formation. 1. -Know physical examination of cerebrospinal Fluid. 2. know the other techniques and methods used in the CSF analysis
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processes.

3. Know criteria to distinguish between pathologic bleeding and aromatic tap.

-Know pathologic diseases detection by CSF.

1. -Understand CSF immunologic examination.
2. Know protein electrophoresis technique for CSF analysis.

Know microscopic examination of CSF.

1. Know how to examine several bacterial and fungal organism in specimens under the microscope

Know important analytes have diagnostics value for CSF analysis.

-Know CSF enzyme levels in variety of pathologic conditions.

Understanding composition and function of seminal fluid

1. -Know the techniques and methods used in the seminal fluid analysis processes.
2. -Know how to provide seminal fluid diagnostic information.
3. -Know important chemical tests in the seminal fluid.
4. Know Gastric fluid collection, physiology of gastric secretion, Chemical composition and gastric analysis.
4. -Know routine physical and chemical analysis

-Know normal urine constituents,

Value of urine screening and early detection of disease

-Know physical examination of the urine colour and transparency.

-Know distinctive normal and abnormal odour of urine.

-Understand factors affecting the colour of urine.

-Understand regular Quality control checks.

-Know storage and use of urine testing reagents.

-Know chemical examination of the urine.

-Know chemical abnormalities detection in urine.

-Use reagent strip as screening tests.

-Understand clinical significance of chemical dipstick reactions and

Possible changes in an unpreserved urine specimen when left at room temperature in light.

-Perform other chemical test used for determining abnormalities in urine glucose.

-Know causes of glycosuria.

-Know choice of test and causes of false negative and positive results.

-Know abnormalities of protein in urine.

-Understand causes and types of proteinuria.

-Understand mechanisms of proteinuria and management of acute and chronic renal failure.

-Know 24h urine protein and Bence-jones protein. Know microscopic examination of the urine sediment.

-Know microscopic sediment stains and characteristic appearance of normal and abnormal cells in urine sediment.

-Know types of urinary casts and their appearance.

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Value of urine screening and early detection of disease.

Know physical examination of the urine colour and transparency.

-Know distinctive normal and abnormal odour of urine.

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-Know 24h urine protein and Bence-jones protein

Know microscopic examination of the urine sediment.

-Know microscopic sediment stains and characteristic appearance of normal and abnormal cells in urine sediment.

-Know types of urinary casts and their appearance.

-Know microscopic characteristic appearance of normal and abnormal urinary crystals.

-Know microscopic examination of micro-organisms, bacteria, yeasts, mucus, and parasite etc

Know metabolic products in the urine and the best known tests for detection and distinguish metabolic products such as Homogentisic acid, Tyrosine, melanin phenylketonuria.

-Understand causes of metabolic pathway defects.

-Know miscellaneous special tests for metabolic products.

-Know causes of ketonuria and haematuria.

-Understand factors affecting the reagent strip test for blood.

Understand importance of urine screening test in the neonatal period.

-Know investigation on reducing substances other than glucose.

-Know urinalysis in the assessment of jaundiced infants and management in elderly patients.

Outline urine porphyrins and precursors.

-Describe intermediate compounds of porphyrins in the production of hem.

-Understand inherited enzyme deficiencies and lead poisoning interrupt the Hem synthesis pathway

Describe molecular characteristics of hCG.

-Know methodologies for pregnancy testing.

-Know causes of ketonuria in pregnancy.

-Know benefits of screening urine during pregnancy to detect disorders and abnormalities required further investigation to identify other disorder

-Understand metabolic pathway of tryptophan and dysfunction in metabolism

Describe classification of urinary calculi.

-Understand inspection of calculi and causes of various calculi.

-Know techniques for analyzing calculi.

	<p>Understand factors that predispose to calculi formation</p> <p>-Know microalbuminuria.</p> <p>-Understand factors associated with microalbuminuria.</p> <p>-Know Lambda light chain and Kappa light chain analysis in urine</p>
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Course Title:-Practical

EXERCISE	CONTENTS	HOURS
1.	<p>knowledge of the types of specimens necessary for body fluids testing.</p> <p>-Know how to collect body fluid samples Know normal and abnormal physical properties of body fluid specimens and types of chemical examination used in body fluids</p>	2
2.	<p>Know routine synovial fluid analysis using a microscope.</p> <p>Know amniotic Fluid Analysis</p>	2
3.	<p>Know composition of Serous Fluids: Pleural, Pericardial and Peritoneal Know specimens collection and information needed for cerebrospinal fluid Analysis.</p> <p>-Know PH and protein determination in CSF.</p>	2
4.	<p>Perform haematological examination. cell count and differential in CSF. Detect meningitis in CSF using latex agglutination.</p> <p>Perform CSF protein by using electrophoresis</p>	2
5.	<p>Able to perform grams stain and bacterial culture for CSF and use the microscope in the examination of several bacterial and fungal organism.</p>	2
6.	<p>-Know how to determine enzyme level for lactate dehydrogenase (LDH) and creatinine kinase (CK)</p> <p>Know specimen collection.</p> <p>- Perform routine seminal fluid Analysis by microscopically.</p>	2
7.	<p>Measure fructose level in seminal fluid.- Know measurement of gastric acid and PH.</p>	2
8.	<p>- Know certain aspects and regulation of urine specimen's collection such as volume, time, and method of collection.</p> <p>-Know basic method for determining the PH and specific gravity of urine.</p>	2
9.	<p>To be familiar with variation in normal and abnormal urine colour due to pathologic conditions or normal circumstances such as medications and diet.</p> <p>-Know odour indication in urine sample and Distinguish normal and abnormal odours due to pathologic conditions, improper handling or storage of the urine specimen</p>	2

<p>10.</p>	<p>Understand methodologies, procedure, reagents, test principle, sensitivity and factors that can affect reagent strip testing.</p> <p>-Perform screening tests to detect glucose, protein, RBCS, WBCS, blood, bilirubin, ketones, urobilinogen, PH, nitrates and density.</p> <p>Able to determine glucose and other reducing substances.</p> <p>Able to perform copper reductase tests,Bence Jones protein, and 24-hour urine protein estimation.</p> <p>-Able to use centrifuge, stains and microscope to identify on cells and casts in urine.</p> <p>-Able to identify and distinguishing of normal and abnormal crystals based on microscopic appearance and urine PH.</p> <p>-Able to identify micro organism's.</p> <p>-Able to determine screening tests of metabolic products in urine.</p>	<p>2</p>
<p>11.</p>	<p>Able to determine metabolic products in urine.</p> <p>able to determine ketone and bilirubine in urine.</p>	<p>2</p>
<p>12.</p>	<p>- Able to determine galactose and fructose.</p> <p>-Able to prepare the reagent and detection on urobilinogen, coproporphyrin and protoporphyrin using UV lamp Ehrlichs reaction.</p>	<p>2</p>
<p>13.</p>	<p>-Know how to determine hCG by glutination inhibition immunoassay.</p> <p>-Know chemical analysis of renal calculi and understand calculi chemical composition.</p>	<p>2</p>
<p>14.</p>	<p>Know special advanced tests for determination microalbuminuria</p> <p>Lambda and kappa light chain</p>	<p>2</p>
<p>TOTAL</p>		<p>28</p>