

SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

Course Number: MLT-120 Department: Clinical Lab Science

Course Title: Urinalysis and Body Fluids Semester: Spring Year: 2021

COURSE OBJECTIVES: At the end of this course, students are expected to be able to: perform a manual and automated complete urinalysis, demonstrate a working knowledge of the hemocytometer and its imprinted grid, prepare and review appropriate slides to evaluate stool and vaginal fluids, and correlate all lab values with the patient's clinical picture to aid in diagnosis of disease.. Prerequisite MLT-110 & 112 Co-Requisite MLT-120L

Student Learning Outcomes

Topic	Learning Outcomes
Upon the completion of each lecture section, the student will be able to fulfill the section objectives as outlined in the assigned text and materials and/or defined by verbal instruction to the level identified in the MLT Program Matriculation Policy.	
Safety and Quality Control	<ul style="list-style-type: none">• Discuss the procedures and documentation for quality control of urinary specimens, reagents, control material, instrumentation, equipment and reporting of results.• Practice all safety protocols and apply universal precautions when performing laboratory skills in the student laboratory.
Specimen Collection and Processing	<ul style="list-style-type: none">• Identify proper collection of urine and different types of specimens.<ul style="list-style-type: none">• List the various methods in which urine samples are collected• List the basic rules for specimen handling and explain the importance of each.• Identify methods of urine preservation and describe the purpose of each.• List correct procedure for collection of timed urine specimens.

<p>Anatomy and Physiology of the Kidneys and Concepts in Renal Function</p>	<ul style="list-style-type: none"> • Identify and state the function of the basic structures of the kidneys • Diagram the structure of the nephron • Describe the function of the urinary system • Explain the flow through the kidneys and what happens at each point in relation to water and salt. • Describe the formation and constitution of urine. <ul style="list-style-type: none"> • Recognize normal and abnormal daily urine volume. • List the functions of the kidneys • Define renal threshold • State the purpose of the Renin-angiotensin-aldosterone system • State the primary causes of acute and chronic renal diseases.
<p>Physical and chemical examination of urine</p>	<ul style="list-style-type: none"> • List common terminology describing the physical characteristics of urine and the significance of each. • Define specific gravity, state the principle of each measurement procedure and the significance. • Define osmolality and describe the procedure for measurement in the laboratory • Describe the principle of each chemical test on urine including: reagents needed, indicators used, colors produced, chemical reaction possible errors and quality control. • Characterize chemical tests as: Diazo salt tests, Enzyme reactions, Changes in pH, and Chemical reactions • List possible cause for false positives and negatives when performing urinary chemical tests. • Describe the appropriate confirmatory tests to be performed subsequent to abnormal findings on the dipstick including test principle and limitations.
<p>Microscopic Examination of Urine</p>	<ul style="list-style-type: none"> • Explain the importance of standardization of testing and list some of the ways it is accomplished in microscopy • List staining techniques available and what they are used to visualize • Describe other types of microscopy besides bright field microscopy and list their used • Define cytocentrifugation as list its uses • Describe proper preparation of urine sediment.

	<ul style="list-style-type: none"> • List and describe normal and abnormal formed elements found in urinary sediments. • Correlate normal and pathological states associated with the various physical, chemical and microscopic findings
<p>Renal and Metabolic Diseases</p>	<ul style="list-style-type: none"> • Characterize renal disorders as glomerular, tubular, interstitial, vascular, or other • List the types of glomerular diseases, ex. chronic, acute, autoimmune • List the types of tubular diseases, ex acute ischemic or toxic and dysfunction • Define <i>Nephrotic Syndrome</i> and list symptoms associated with this disease • Evaluate laboratory results for renal diseases • Differentiate between acute glomerulonephritis, Nephrotic syndrome, and Urinary tract infection based on laboratory results
<p>Fecal Analysis</p>	<ul style="list-style-type: none"> • Describe the collection procedure for fecal analysis. • List the stains used in the Fecal WBC exam and the disease states it helps to diagnose • Compare and contrast the various tests for carbohydrate testing on stool samples • State the principle of the occult blood, reagents used, procedure and clinical significance. • Discuss steatorrhea and the fecal fat test.
<p>Vaginal, Amniotic, and Seminal analysis</p>	<ul style="list-style-type: none"> • List the common laboratory testing performed on Vaginal fluids • Define “Clue cell” and discriminate in the lab versus a normal epithelial cell • Explain the use of KOH in vaginal testing • Discuss the formation and composition of seminal fluid. • Describe the physical, chemical and cellular characteristics of normal seminal fluid. • Describe the principles and procedures used in routine analysis of seminal fluid including; volume, viscosity, pH, sperm count, motility and morphology. • Correlate abnormal findings with clinical conditions • List the functions of amniotic fluid and describe the normal composition. • Explain L/S ratio and the significance in relationship to fetal maturity. • Interpret Liley Graph as it relates to severity of symptoms in the infant • Describe procedures and principles used in amniotic fluid analysis

<p>Cerebral Spinal Fluid</p>	<ul style="list-style-type: none"> • Describe the anatomy of the Central nervous system and the formation of CSF. • List the major function of CSF. • Describe the appearance of normal and abnormal CSF and the significance of each abnormal appearance. • Describe the appropriate collection of CSF. • List the testing routinely performed on CSF • Correlate abnormal findings with clinical conditions
<p>Other Body Fluids – Synovial and Serous</p>	<ul style="list-style-type: none"> • Discuss the formation, function and composition of synovial fluid. • Describe the principles and procedures used in routine analysis of synovial fluid including: physical analysis, cell counts and identification, culture and sensitivity and crystal formation. • Correlate abnormal findings with clinical conditions. • Define serous fluids formation, function and normal composition. • Name the type of fluid that comes from each specific body site as well as the name of the procedure to extract each type of fluid • Describe the principles and procedures used in the routine analysis of serous fluids. • Correlate abnormal findings with clinical conditions