

Ministry of Higher Education and Scientific research



Kurdistan Region-Iraq

Paitaxt Private Technical Institute

Department of Pathological Analytics

Course Book

Laboratory Technology

First Stage

Academic Year: 2023/2024

1-Course Name	Laboratory technology
2-Lecturer in charge	
3-Department/ College	Pathological Analytics/ Paitaxt Institute
4-Contact	
5-Time(In hours) per week	Theory :2 hours
6-Office Hours	Hours
7- Course Code	PAd08

Course description:

One of the first courses in the MLT program introduces the role of MLTs in health care and the professions open to them upon completion of the program. Online readings and lectures present ethics and mathematics, along with a look at licensure for their specific state and requirements.

An offline part of this course includes students going to a clinic to see a laboratory in person, and meeting and speaking with MLTs. Online components cover procedures, tools, lab safety, specimen collection and quality assurance and more about the role that MLTs play in the health care systems.

Course objectives:

The aims of this course are, the student will be able to:

پہلیامہ گرنگہ کانی کورسہ کہ

While practicum are done in a laboratory or clinical setting, theory of this course is learned through reading materials, online tutorials and online lectures. The focus of this course is the analysis of urine, seminal fluid, feces, amniotic fluid and spinal fluid. Other bodily fluids are covered as students research the chemical properties of each fluid and the procedures in a laboratory setting.

Course Reading List and References

سہرچاوه گرنگہ کانی نہو کورسہ

گؤفار و ریفیوو (نینتہرنیت)	سہرچاوهی سوودبہخش	سہرچاوه بنہرہتیہکان
	Neal R. Chamberlain. Medical Microbiology, 2009 ,The McGraw-Hill Companies	Jawetz, Melnick, & Adelberg's Medical Microbiology, 23rd Edition
	Essentials of Bacteriology and Immunology	Edited by Fouad Hussein Kamel and Sanaria Fawzi Jarjes M.Sc Microbiology Hawler Polytechnic University/ Medical Technical Institute, 2015
	Basic laboratory procedures in clinical bacteriology	Second edition. J. Vandepitte and J. Verhaegen, K. Engbaek. <i>et.al.</i> World Health Organization Geneva 2003

بابہ تہ کان:

Weeks	Theory	Practic	No. of hours
1	Sterilization methods with differences physical and chemical methods	Laboratory of microbiology	2
2	Examination of Urine samples Sampling 1. Physical examination: volume, color, odor, appearance, specific gravity and PH. 2. Chemical examination: a. Protein: - Heat and acetic acid test b. Sulfosalicylic acid method c. Reducing Sugar – Benedict test d. Ketone bodies - Rothera test e. Bile pigment - Fouchet method f. Bile salt - Hays test g. Blood - Benzidine test h. Urobilinogen & Porphobilinogen - Ehrlich aldehyde and schwartz test	Laboratory instruments	2
3	Examination of Stool samples: 1. Physical examination 2. Chemical examination a. Occult blood b. Reducing sugar	Sampling of urine and examination (physical and chemical examination).	2
4	Examination of Semen Samples 1. Physical examination 2. Chemical examination 3. Microscopic examination. 4. Further testing included	Sampling of stool and examination.	2
5	Throat swab	Sampling of semen and examination.	2
6	Examination of Cerebrospinal Fluid	Sampling of CSF and	2

	(CSF) 1. Physical examination. 2. Chemical examination. 3. Microscopic examination	examination	
7	Examination of Body Fluids (pleural, pericardial and peritoneal) 1. Physical examination 2. Chemical examination. 3. Microscopic examination	Genus Staphylococcus laboratory diagnosis methods	2
8	Examination of sputum or respiratory secretion: 1. Physical examination. 2. Chemical examination. 3. Microscopic examination.	Genus Streptococcus laboratory diagnosis methods	2
9 10	Serology test (reaction). 1.Classification of antigen-antibody interactions. 2.Qualitative agglutination test. 3- Passive direct haemagglutination. 4. Passive indirect haemagglutination (Coomb's Test). 5. Haemagglutination Inhibition 6. Precipitins. 7. Precipitation and Flocculation Reaction. 8. Radial Immunodiffusion (Mancini).	Serological test	2
11	Examination		2
12	Immunoelectrophoresis. Counter current electrophoresis	Chromatography test	2
13 14	Radio immune electrophoresis and Immunofluorescence. Complement fixation test. Neutralization test	Sampling assays	2
15-16	ELIZA - Direct ELISA. -In Direct ELISA. Indirect Sandwich ELISA Competitive ELISA	ELIZA Mashine	2
17	Examination		2
18	Presentations and reports		2
Total			36 Hours

نمونه‌ی پرسپاژه‌گان

Type of question	Example
Multiple choice	Is the time elapsed between exposure to pathogenic microbes and first appearance of clinical symptoms. a-Illness stage b- Prodromal stage c-Incubation period d-Convalescence
Definition	Define the followings: Microbiology, Bacteria, Pathology, Normal flora
True and false	Put letter F (false) or letter T (true) in front of the statement: () Algae are non-cellular entities that are parasites of cells.
Enumerating	The main reasons of nosocomial infection (NCI) are the followings: 1 - 2- 3-
Quiz	What are the differences between flagella and pili?
Filling blanks	Inner layer of bacterial cell wall is multilayer structure composed of-----.

ئامانجەكانى ئەم كۆرسە دەكرىت لەم خالانەى خوارمەو كورت بكرىنەو:

STUDENT LEARNING OUTCOMES

Upon successful completion of this course, the student will be able to:

- 1. Compare and contrast different diseases, including the properties of different types of pathogens, and the mechanism of pathogenesis.**
- 2. Compare and contrast therapeutic treatments for microbial infections, and distinguish human diseases when a is likely to be the most appropriate response.**
- 3. Perform different laboratory instruments procedures according to appropriate safety standards.**

ناوەرۆکی زانستی بابهتهكه:

LECTURE TOPICS

Specimen collection, processing, and microscopic examination of materials from infected sites in parasitology , fungi , bacteriology and virology in an organ system and approach to diagnostic microbiology

The Medical Laboratory Technology curriculum prepares individuals to perform clinical laboratory procedures in chemistry, haematology, microbiology, and immunohematology that may be used in the maintenance of health and diagnosis/treatment of disease. Course work emphasizes mathematical and scientific concepts related to specimen collection, laboratory testing and procedures, quality assurance and reporting/recording and interpreting findings involving tissues, blood, and body fluids. Graduates may be eligible to take the examination given by the Board of Certification of the American Society for Clinical Pathology.