

Ministry of Higher Education and Scientific Research



(Laboratory Instrument) Course Catalogue 2023-2024

College/ Institute	Paitaxt Private Institute	
Department	Pathological Analysis	
Module Name	Laboratory Instrument	
Semester	1 st	
Module type	General	
Weekly hours	4	
Weekly hours (Theory)	(2)hr Class	()hr Workload
Weekly hours (Practical)	(2)hr Class	()hr Workload
Lecturer (Theory)		
E-Mail		
Lecturer (Practical)		
Email		

Course Book

- **Course overview:**

The student will demonstrate proper handling of laboratory chemicals; operate common analytical instruments; describe the theory and applications of various analytical instruments including types of electrophoresis, spectrophotometer, chromatography, and centrifugation; and practice laboratory safety.

- **Course objective:**

identify in two or three paragraphs the important objectives of the course and show those points that students should learn at the end of the course.

- **Student's obligation**

- **This course will introduce the student to the general role of health care provider as well as the specific role of the Medical Laboratory Technician. Basic aspects of medical terminology, laboratory safety, quality control, microscopy, pipette techniques, and laboratory mathematics as the following**

- 1-The student's attention in all theoretical and practical lectures in the academic year.
- 2-Completion of all tests.
- 3-Attendance in exams.
- 4-Write or prepare reports.

- **Forms of teaching**

lecture halls with data show equipment for lecture presentations, whiteboard, overhead projector, posters

- **Assessment scheme**

6% Mid. Theory exam
 10% Mid. practical exam
 4% Quiz
 40%Activity
 25%final practical
 15% final theory

- **Specific learning outcome:**

- Ability to develop general knowledge
- Knowledge and understanding of the subject area and understanding of the profession
- Ability to identify, differentiate, pose and resolve problem
- Demonstrate the ability to think critically and solve problems in a laboratory setting
- Ability to apply knowledge in practice
- Ability to search for process and analyze information from a variety of sources

- **Course Reading List and References:**



- **General or text book of Lab. Instrument (Author), Donald M. West (Author),**
- **Modern Analytical Chemistry 1st Edition**
- **by David T Harvey**
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- Course topics (Theory)	Week	Learning Outcome
Microscope (Parts of Microscope, Use of Microscope & care of microscope).	1	Describe the identity of each part
Autoclave	2	Explain the types of Microscope
Oven	3	Define and explain each part with the type of instrument
Balances	4	Two devices in detail
Incubator	5	Known types of incubators and parts
Ph. meter	6	Learning to how can using the oven and the part
CBC	7	Count blood cells, principle, and measurement
Spectrophotometer	8	Describe the acidity and alkaline solutions
Water bath	9	Describe the principle of the device
Centrifuge	10	Measurement of the wavelength of the substance
VIDUS+ MiniVIDUS	11	Application of this device in the viral field
Electrophoresis Elisa	12	Parts and operation of devices
Practical Topics		Learning Outcome
Microscope (Parts of Microscope, Use of Microscope & care of microscope).	1	Describe the operation of the device and identify each part
Phase contrast Darkfield microscope	2	Explain the types of Microscope details
Centrifuge	3	Operation of the device and explain each pattern rt with the type of instrument
Balances Oven	4	Two devices in detail

Incubator	5	Explain the operation device and the effect of temperature on the types of incubators and parts
Autoclave	6	Learning to how can using the autoclave and the part
CBC	7	Operation of the Count blood cell devices, principle, and measurement
Ph. Meter	8	Describe the acidity and alkaline solutions Describe the principle of the device in practical
Water bath	9	Describe the principle the of device
Spectrophotometer	10	Measurement of the wavelength of substance and applied in many solutions to see the difference between them
VIDUS+ Mini VIDUS	11	Application of this device in viral field
Electrophoresis Elisa	12	Parts and operation of devices

Q1) Fill in the blanks with suitable words:

(28M)

1- The centrifuge works using the -----

2- Distillation is a process of ----- the component or substances from a liquid (Mixture) by selective - ----- and -----.

3-The working principle of ----- is to heat a mixture at a specific temperature.

4-In a laboratory centrifuge that uses sample tubes, the radial acceleration causes -----particles to settle to the bottom of the tube, while ----- substances rise to the top.

Q2) Answer the followings:

(24M)

A- Types of pH meter:

B- Write the different between the light microscope and electron microscope

C- Enumerate the classification of centrifuges:

- **External Evaluator**

The outcome of course book evaluation is commonly more explicit and follows the principles and rules in general.