



Module (Course Syllabus) Catalogue 2022-2023

College/ Institute	Koya Technical Institute	
Department	Medical laboratory technical	
Module Name	Medical lab instruments	
Module Code	MEL203	
Degree	Technical Diploma <input checked="" type="checkbox"/>	Bachler <input type="checkbox"/>
	High Diploma <input type="checkbox"/>	Master <input type="checkbox"/> PhD <input type="checkbox"/>
Semester	Second	
Qualification	Master's degree in Physiology	
Scientific Title	Assist. Lecturer	
ECTS (Credits)	6	
Module type	Prerequisite <input type="checkbox"/>	Core <input checked="" type="checkbox"/> Assist. <input type="checkbox"/>
Weekly hours	4	
Weekly hours (Theory)	(2) hr Class	(3) Total hrs Workload
Weekly hours (Practical)	(2) hr Class	(1) Total hrs Workload
Number of Weeks	12	
Lecturer (Theory)	Aveen Muhsin Asaad	
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Lecturer (Practical)	Sardar Hussein Ali	
E-Mail & Mobile NO.		
Websites		

Course Book

Course Description	<p>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.</p>
Course objectives	<p>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.</p> <p>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, practice techniques, laboratory mathematics as the followings</p> <ol style="list-style-type: none"> 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.
Student's obligation	<p>1. Attendance: The students should be attending and completing all tests, assignments, and exams. They must participate in team and solo working during class activities and laboratory works.</p> <p>2. Participation: The students must participate in team and solo working during class activities and laboratory works. They must enrol in all exams (midterm and final) and all assignments (quiz, seminars, paper, reports, and homework).</p>

Required Learning Materials	<p>Theory: Lecture halls with computers equipment for lecture presentations, whiteboard, and data show.</p> <p>Laboratory practice: Equipment available in various clinical settings General: Library, computer suite with internet access</p>				
Evaluation	Task	Weight (Marks)	Due Week	Relevant Learning Outcome	
	Paper Review				
	Assignments	Homework	5		
		Class Activity	2		
		Report	10		
		Seminar			
		Essay			
		Project			
	Quiz	8			
	Lab.	10			
	Midterm Exam	25			
	Final Exam	40			
Total	100				
Specific learning outcome:	<p>By the end of this course the students will be able to:</p> <ol style="list-style-type: none"> 1. Ability to develop general knowledge 2. Knowledge and understanding of the subject area and understanding of the profession 3. Ability to identify, differentiate, pose and resolve the problem 4. Demonstrate the ability to think critically and solve problems in a laboratory setting 5. Ability to apply knowledge in practice 6. Ability to search for process and analyse information from a variety of sources 				

Course References:	General or textbook of Lab. Instrument (Author), Donald M. West (Author). Modern Analytical Chemistry 1 st Edition - by David T Harvey	
Course topics (Theory)	Week	Learning Outcome
Microscope (Parts of Microscope, Use of Microscope & care of microscope).	1	Able to know the general knowledge about Microscope, and the way and mechanism of using
Phase-contrast & Darkfield microscope	2	Be able to know all the types of Microscopes and the difference between types.
Centrifuge	3	Identify the Centrifuge, components and its functions, and the way for using it
Balances and Oven	4	Be able to know by the detail of principle of using these two instruments, and the role of them
Incubator	5	Identify the Incubator, components and its functions, and the way for using it
Autoclave	6	Identify the Autoclave, components and its functions, and the way for using it

Count Blood Cell (CBC)	7	Identify the CBC, components and its functions, and the way for using it
PH Meter	8	Identify the PH meter, components, and its functions, and the way for using it
Water bath	9	Identify the Water bath, components and its functions, and the way for using it
Spectrophotometer	10	Identify the Spectrophotometer, components and know-how to measure the wavelength of substance
VIDUS + Mini VIDUS	11	Identify the VIDUS, components, and types. Demonstrate the ability of this device in the viral field
Electrophoresis (Elisa)	12	Explain the parts and the way of operating of devices

Practical Topics	Week	Learning Outcome
Microscopic component and its uses	1	Be able to know all parts and their functions and how to use a microscope
Phase-contrast & Darkfield microscope	2	Explain the types of Microscope in details
Centrifuge	3	Able to know about the operation of device and explain each part with type of instrument
Balances and Oven	4	Be able to know about these two instruments in detail
Incubator	5	Explain the operation device and the effect of temperature on the types of incubators.
Autoclave	6	Able to know about the operation of device and explain each part with type of autoclave
CBC	7	Able to know about the operation of CBC and the way of using it.
PH meter	8	Able to know about the operation of device and explain the procedure

Water bath	9	Able to know about the operation of Water bath and explain each part with type of instrument
Spectrophotometer	10	Able to know about the operation of spectrophotometer and explain each part with type of instrument
VIDUS + Mini VIDUS	11	Identify the VIDUS, components, and types. Demonstrate the ability of this device in the viral field
Electrophoresis (Elisa)	12	Explain the parts and the way of operating of devices

Questions Example Design

Q1) Fill the blanks with suitable words:

1. Distillation is a process of ----- the component or substances from a liquid (Mixture) by selective ----- and -----.
2. The working principle of ----- is to heat a mixture at a specific temperature.
3. 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:

- A- Types of pH meter:
- B- Write the difference between the light microscope and electron microscope
- C- Enumerate the classification of centrifuges.

Extra notes: To encourage students to have roll-in daily activities, I will assess students each lesson. Never stop learning and give up, so I welcome any positive suggestions from students.

External Evaluator