Module (Course Syllabus) Catalogue

2024-2025

College/ Institute	Koya Technical Institute	
Department	Medical Laboratory Technology	
Module Name	Blood Bank	
Module Code	BLB403	
Degree	Technical Diploma ■ Bachler ☐ High Diploma ☐ Master ☐ PhD ☐	
Semester	Fourth	
Qualification	MSc/ PHD student	
Scientific Title	Lecturer	
ECTS (Credits)	5	
Module type	Prerequisite ☐ Core ■ Assist. ☐	
Weekly hours		
Weekly hours (Theory)	(2) hr Class	( )Total hrs Workload
Weekly hours (Practical)	(2) hr Class	( )Total hrs Workload
Number of Weeks	12	
Lecturer (Theory)	Mehri Mirhaj Mohammedsalih	
E-Mail & Mobile NO.	Mehri.salih@epu.edu.iq	
Lecturer (Practical)		
E-Mail & Mobile NO.		
Websites		

Course Book

Course Description	This course aims to provide a comprehensive theoretical knowledge of blood bank including the blood transfusion and corresponding tests. It is one of the most important branch in the field of MLT. It is regarded as one of the major sections in any hospitals labs. In this course, the students will learn the fundamentals about blood banking basics and tools related to the blood tests. The main idea of giving blood bank is to make our students familiar with the elements exist within the blood especially the blood cells.
Course objectives	The main learning objectives of the course are designed to help a second-year medical laboratory student. Students should be able to: - Have advanced knowledge on systematic of blood bank. - Be able to understand blood transfusion and principle tests. - Learn new techniques and perform various experiments related to blood bank application These objectives will be very useful guide for students at the Medical Institutes. In addition, they can be used by students to prepare themselves in the future for the hematology section.
Student's obligation	1-The student attention in all theoretical and practical lectures in academic year. 2- Completion of all tests. 3- Attendance in exams 4. Write or prepare reports, lab reports and seminars. 5. Excessive absences can reduce a student's grade or deny credit for the course 3- The students are required to set for 2 exams paper for theoretical part and 2 other exams papers for practical classes. 6. Students are required to submit 2 assignments (one assignment) in each term. 7. The monthly home work is one of the important duties to the students during the year. They are required to submit minimum 5 reports. 8. Quizzes will be holds during the theory and practical classes, in every 3class's one test.
Required Learning Materials	Students are required to apply MOODLE program as the platform of electronic study. They need to use Laptop or mobile version. They need to use university G-suite account for accessing the course materials and assignments.

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. Report		10		
	Midterm Exam		25		
	Final Exam		40		
	Total		100		
Specific learning outcome:	1) Apply principles of safety, quality assurance and quality control in blood bank 2) Evaluate specimen acceptability 3) Demonstrate an understanding of the underlying processes in blood cell disorders 4) Learn the most common medical terms in immunohematology. 5) Reflect analytically on student's study learning styles in order to be able to identify and review additional literature to enhance learning. 6) Compare and contrast immunohematological values under normal and abnormal conditions. 7) Perform and explain principles and procedures of tests to include sources of error and clinical significance of results. 8) Determine suitability of immunohematology specimens and dispose of them in the appropriate biohazard containers. 9) Apply the appropriate and safe medical procedure for checking blood transfusion 10) Awareness of the risks and complications of blood transfusion				
Course References:	1) Quinley, E.D., 2020. Immunohematology: principles and practice. Jones & Bartlett Publishers. 2) Harber, I. and Turner, M., 2006. Essentials of Blood Banking (A Handbook for Students of Blood Banking and Clinical Residents). 3) Harmening, D.M., 2018. Modern blood banking & transfusion practices. FA Davis.				

	▪ **Useful references:** 1) Powers L.W. (1989). Diagnostic hematology clinical and technical principles. 1st ed. Mosby. USA. 2) Wallach J. (2007). Interpretation of Diagnostic Tests.Philadelphia. Lippincot Williams and Wilkins, a Wolters Kluwer business. ▪ **Magazines and review (internet):** 1) Blood Journal: www.bloodjournal.org/

Course topics (Theory)	Week	Learning Outcome
Introduction to blood bank	Week 1	Introduction to Blood Banking , blood composition, blood bank antigens and antibodies
Blood Donation and blood collection, types of defferals, types of blood donors	Week 2	Blood Donation and blood collection, types of defferals, types of blood donors
Types of blood donation	Week 3	Types of blood donation, donor selection, Pre-transfusion Testing, Donor and recipients basic testing
Blood transfusion and apheresis	Week 4	Blood transfusion and apheresis, Approved Anticoagulant Preservative Solutions, Additive Solutions, blood storage, Blood component labeling, Aphaeresis Definition and uses
Blood components apheresis	Week 5	Blood components apheresis, Therapeutic uses for apheresis, blood components life span, Apheresis of whole blood, Indication of whole blood transfusion

Transfusion reactions and complications	Week 6	Transfusion reactions and complications, Types of transfusion reactions, The causes of HTR, Events in haemolytic transfusion reaction, Role of transfusionist in HTR Measures used to protect the donor and donor selection, The preparation of blood from whole blood
Hemolytic transfusion reactions	Week 7	1- Leucocyte incompatibility 2- Reactions due to plasma proteins 3- Platelet incompatibility 4- Anaphylactic reactions 5- Allergic reactions 6- Transfusion-related acute lung injury (Trali) Transfusion reactions based on time factor
Non hemolytic transfusion reactions	Week 8	Antibody screening (Direct and indirect antiglobulin tests) Cross-matching
Antibody screening	Week 9	Antibody identification and Titration
Adverse effects of blood transfusion	Week 10	Characterization of Blood Transfusion: Types of Transfusion therapy, Blood transfusion Reactions

Complications of blood transfusion I	Week 11	Clinical features of a major hemolytic transfusion reaction, Investigation of an immediate transfusion reaction, Management of patients with major hemolysis
Complications of blood transfusion II	Week 12	Hemolytic disease of the fetus and newborn (HDFN), Autoimmune hemolytic anemias
Practical Topics	Week	
The ABO Blood Group System (Red cell preparation and ABO grouping), The Rh Blood Group System Blood Group Antigen System and testing	Week 1	. Blood handling, collection and sampling from patients with hematological malignancies including bone marrow 3. Learning of materials and tools are related to hematology lab and blood transfusion medicine 4. Blood safety basics 4. Understanding pre- and post-transfusion testing 5. Blood Transfusion: Diagnostic Tests and Procedures
Red blood cell washing and preparation of different cell suspensions	Week 2	
Cross matching test	Week 3	
Clotting time	Week 4	
Bleeding time	Week 5	
Red cell fragility test	Week 6	
Partial thromboplastin time (PTT)	Week 7	
Prothrombin time (PT), **Thrombin time**	Week 8	
Bone marrow (sampling and examination)	Week 9	
Hb electrophoresis	Week 10	
Direct coomb's test **Indirect coomb's test**	Week 11	

	Week 12	

Examinations:

A- Theory Exam

Q1/ Select the correct answer for the following multiple choice: (X Marks)

Q2/ Choose the correct option to fill in the blanks: (X Marks)

Q3/ Identify whether the following statements are true or false: (X Marks)

Q4/ Match the questions in column A to the "appropriate" answers in column B: (X Marks)

	A		B
1			
2			
3			
4			
5			

Q5/ Answer the following questions: (X Marks)

1) Principe of transfusion therapy

B- Practical Exam

Written part

Move part

Extra notes:

In this course theoretical part we will focus in some subjects such as; tests that are necessary to do before and after transfusions in general especially the important ones. In Assignments: Every lecture there is 10 min free for student to preview a seminar about a subject chosen by the lecturer previously planned and the purpose of this is to encourage the student to study as work team and encourage them to pass their fears on facing others for the future and consider as an activity for the students. 2- The best seminars will take into consideration and students will be rewarded.

External Evaluator