



A- Course Title, Code, Academic Year:

Blood Bank (1437-1438 H)

B- COURSE INFORMATION:

Course Code	Course Title	Credit Units			Study Level	Pre-requisites
		Total	Theory	Practical		
MLT-448	Blood Bank	3	2	1	8th	MLT-423
Course Coordinator		Extension		Email Address		
Dr. Abdel Rahim Mahmoud Muddathir		3614		ammahmoud@taibahu.edu.sa		

C- COURSE DESCRIPTION:

Immunohematology is the study of blood antigens and antibodies. The course covers principles, procedures and the clinical significance of tests results. Topics in blood banking also include blood group systems, pre-transfusion testing, and adverse effects of transfusions, donor selection, blood components and hemolytic disease of the newborn. The course also explores methods for blood processing, handling, and storage of blood components, and examines cross matching and antibody identification procedures. The class utilizes a student laboratory for experiences in fundamental immunohematology laboratory techniques, including quality control and safety.

D- COURSE OBJECTIVES:

By the end of this course the student should be able to:

- 1- Apply the theoretical knowledge of immunology and complement to testing performed in the transfusion service.
- 2- State the principle of each testing procedure performed in immunohematology.
- 3- Demonstrate an understanding of genetics as it applies to immunohematology by interpreting a Punnett square.
- 4- List the characteristics of the ABO, Rh and other blood group system antigens and antibodies.
- 5- Demonstrate problem solving by recognizing discrepant results and providing potential resolution of the problem.
- 6- List the methods used to identify the most commonly encountered blood group antibodies.
- 7- Describe the three types of hemolytic disease of the fetus and newborn, antibody specificity involved, testing to identify the specificity and treatment for each.
- 8- List the adverse complications of blood transfusion and state the cause, and if appropriate, treatment of each.
- 9- State the methods for evaluating a positive direct anti-globulin test.
- 10- Describe the types of immune hemolytic anemias including results of serologic testing and compatibility testing which must be performed.
- 11- State the requirements for performing compatibility testing and providing transfusion support for organ transplants.
- 12- Describe the donor selection process and accurately determine donor eligibility when given results of donor screening tests.



- 13- Describe the preparation and indicate the appropriate use of blood components by determining the component needed based on laboratory data.
- 14- Describe the quality control, which must be done including the specific tests, frequency of testing and compatibility testing which must be performed.

E- THEORY TOPICS:		
Week	Theory Topic	Contact Hours
1	Ag, Ab,(structure and function) reactions and factors affecting them and complement system	2
2	ABO blood group system and its discrepancies, subtypes of A	2
3	Rhesus blood group system	2
4	Other blood group system	2
5	Serological techniques used in blood banking -1(Saline and additive techniques)	2
6	Serological techniques used in blood banking -2 (Commbbs test)	2
7	Criteria for blood donation and types of blood donation	2
8	Compatibility testing and pre transfusion tests (1)	2
9	Compatibility testing and pre transfusion tests (2)	2
10	Blood transfusion reactions	2
11	Blood products and Haempherasis (1)	2
12	Blood products and Haempherasis (2)	2
13	Hemolytic disease of newborn (Rhesus incompatibility)	2
14	Hemolytic disease of newborn (ABO incompatibility)	2
15	Quality control in blood bank	2

F- PRACTICAL SESSIONS:		
Week	Practical Session	Contact Hours
1	Preparation of red cell suspension	2
2	Antigen antibody reactions	2
3	Direct ABO blood grouping (slides +tubes)	2
4	Indirect ABO blood grouping	2
5	Rhesus blood grouping(genotypes and phenotypes)	2
6	Du method	2
7	ABO grouping by gel technology and Discrepancies	2
8	Test-1	2



9	Direct coomb's test and Indirect coomb's test	2
10	Cross matching	2
11	Antibody screening	2
12	Antibody identification	2
13	HDN	2
14	Antibody elution and titration	2
15	Revision	2

G- ASSESSMENT TASKS:

#	Type of assessment task	Week	Total Grades
1	Continuous assessment	Weeks 1-13	10%
2	Midterm examination (written)	Week 8	15%
3	Assignment submission	Week 10	5%
4	Final practical exam	Week 16	30%
5	Final written examination	Weeks 17-18	40%

H- LEARNING RESOURCES:

1-Required Textbook:

Mollison's Blood Transfusion in Clinical Medicine, 12th Edition .Blackwell. Oxford, (2014)

2- Essential References Materials (Journals, Reports, etc .

Modern blood banking & transfusion practices, by denise harmening 6th edition

Immunohematology for Medical Laboratory Technicians (2010)

Notes:

- Assignments topics and requirements shall be announced by the end of Week-1, the deadline for submission is 12pm Thursday of Week-10 (each semester).
- Assignments and written assessment tasks must be verified against plagiarism, the maximum acceptable percentage is determined by the department (according to each level).
- Continuous assessments may include quizzes, internet searches, home-works, exercises, class activity, scratch cards, presentations, group work, etc.
- Practical exams may contain hands-on experiments, laboratory work, simulations, or demonstrations.
- Written exams will include multiple-choice questions (MCQ), short essay questions, and long essay questions.