Gyanmanjari Innovative University

Course Syllabus
Gyanmanjari Institute Of Medical Science and Health Care
Semester-2

Subject: Blood Banking - PGDMT12509

Type of course: Major

Prerequisite: Basic knowledge of Blood and clinical pathology

Rationale: Blood banking exists to meet the critical need for safe and timely access to blood products, ultimately aiming to save lives and improve healthcare outcomes.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks					Total Marks
				Theory Marks		Practical Marks		CA	
CI	T	P	C	ESE	MSE	V	P	ALA	
4	0	2	5	60	30	10	20	30	150

Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.

Course Content:

Sr. No	Course content	Hrs	% Weightage
1	**Chapter-1 Introduction to blood bank** • Overview History of Transfusion Medicine • Blood banks and blood storage centers, Blood Bank premises and infrastructure • Blood bank management system • National blood policy, standards in Blood Banking, licensing procedures, ethical aspects of blood transfusion	15	25%
2	**Chapter-2 Introduction, Basic Blood collection and anticoagulants** ➢ Preparation of donor, screening and Methods of blood collection • Types of blood samples	15	25%

	• Collection in various age groups • Different vacutainers with color codes disposing both expiry, infected samples and sharps used Various anticoagulants • Anticoagulants used in blood bank • Basic steps in Blood components preparation &labeling ➢ Different types of blood components • Composition- volume, cellular, plasma and clotting factor content • Preparation of Components Preparation of red cell concentrate		
3	**Chapter:3 Blood Group System I , II & Blood Collection** • ABO blood Group system, subgroup of ABO, Variants of ABO blood group system, Rh blood group system. • Gel technique for blood grouping and serological Techniques, AHG test, Other Blood Group systems. • Importance of Atypical antibodies, their detection and clinical significance. • Mandatory screening tests-HIV1&HIV2, HBsAg, HCV, RPR & Malaria. • Component preparation: a) Red cell concentrate b) Fresh Frozen Plasma c) Cryoprecipitate d) Platelet concentrate Introduction of apheresis and Single donor platelet (SDP)	15	25%
4	**Chapter:4 Transfusion, Automation, Biosafety and Quality control in Blood Banking** • Types of Transfusion reaction • Investigation of Transfusion reaction. • Hemolytic disease of Newborn due to ABO, Rh or Other blood group incompatibility. • Automation in Blood collection • Automation in blood grouping, Cross matching -Bio safety and Biomedical waste management. • QC of reagents-Parameters. • Quality Requirements and frequency QC of Blood Components- Parameters, Quality	15	25%

Continuous Assessment:

Sr. No	Active Learning Activities	Marks
1	**Debate on Blood Transfusion Ethics:** Group of students will debate on specific ethical dilemma related to blood transfusion, such as the use of blood substitutes, organ donation from deceased donors, or the rights of Jehovah's Witnesses who refuse blood transfusions on religious grounds and photos need to be upload on GMIU web Portal.	10
2	**Blood Typing Simulation** Set up a blood typing simulation where students get to perform ABO and Rh blood typing tests using simulated blood samples and upload photo on GMIU web Portal.	10
3	**Blood Donation Campaign Project:** Students have to attend one blood donation campaign and campaign photos need to be upload on GMIU web Portal.	10
Total		**30**

Suggested Specification table with Marks (Theory):60

Distribution of Theory Marks **(Revised Bloom's Taxonomy)**						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	20%	40%	30%	10%	-	-

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcome:

After learning the course the students should be able to:	
CO1	Learn about basics of Blood Banking and blood storage.
CO2	Collect Blood sample from patient and proceed for anticoagulantion.
CO3	Analyze blood group of the patient and also able to perform Mandatory screening tests of blood.
CO4	Examine Transfusion, Automation, Biosafety and Quality control in Blood Banking

List of practical:

Sr no.	Description	Unit no.	Hrs
1	Typhoid Analysis	2	2
2	Donor phlebotomy	4	2
3	Blood Group- ABO(Cell and serum grouping)and Rh system	4	2
4	Cross Match Tests	1	3
5	Antibody titer	2	2
6	Direct and indirect agglutination tests (Comb's Tests)	3	3
7	Cold and Warm agglutinin tests	2	4
8	Component preparation	2	3
9	RPR Analysis	2	3
10	Malaria analysis Test	2	3
11	Donor Hemoglobin estimation	2	3
12	AHG test	2	2
	TOTAL		**32**

Instructional Method:

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

Reference Books:

[1] Dr. Praful B. Godkar,Text Books of Medical Laboratory Technology.
[2] Anathanarayana & Panicker – A Text Book of Medical Microbiology
[3] Dr. Mukherjee, Medical Laboratory Technology, Volume I , II & II
[4] Silvertone : Introduction to Medical Lab. Technology