Syllabus for Postgraduate Diploma in Medical Laboratory Technology (PG DMLT)

PG DMLT Semester I

Subject Name: Basic Hematology (BH)

Subject Code: 02ML0102

Objective: To impart students with essential knowledge of principles of blood analysis.

Credits Earned: 4 Credits

Course Outcomes: After the completion of the course:

1. Students will be able to understand the biochemical differences in various blood types and their management.
2. Students will gain knowledge regarding various standard blood indices and relevant techniques to test them.
3. Students will learn about various staining techniques in haematology.
4. Students will become well versed with the identification and diagnosis of various types of blood abnormalities.

Pre-requisite of course: Knowledge of basic immunology and cell biology.

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	IA (M)	CSE (I)	Viva (V)	Practical/ TW	
4	0	0	4	50	30	20	0	0	100

Contents:

Unit	Topics	Contact Hours
1	**Immunohaematology** Introduction & history.Hematopoiesis andHuman blood group systems: ABO, Rh & other important blood group systems.Blood donor: types of blood donor, criteria for blood donor selection, blood collection process, pre & post donation counselling.Blood Banking: Preservation & Storage of blood.Blood component preparation.Transfusion transmitted infections.The technique of blood grouping, cross-matching, Coomb's test.Blood Transfusion Procedure.Complication of blood transfusion & transfusion reactions.Haemolytic disease of fetus&newborn.Major histocompatibility complex & HLA typing.	15
2	**Blood Histology** Physiology of blood formation & cells.Maturation & ultrastructure of blood cells.Bone marrow aspiration methods and staining & preparation of Tray for Bone marrow aspiration and biopsy. Special Stain for Bone Marrow - Periodic Acid Schiff, Sudan Black, Myeloperoxidase.	10
3	**Blood Composition Analysis** Methods of estimation of Haemoglobin. Methods of total counts of WBC, RBC & Platelets. Mechanism of coagulation and anticoagulants used in haematology.Methods of determination of PCV & calculation of different red cell indices (Haemogram). Preparation of blood smear. Various stains & staining methods. Differential leucocyte count.Peripheral blood smear examination, reticulocyte observation. Basic principles of semi or automated blood cell counters & HPLC.	15
4	**Blood Abnormalities** ***Bleeding Disorders:***Acquired and inherited***. Anaemia:***Classification of anaemia.Types of anaemia (definition, pathophysiology & lab findings): Iron Deficiency anaemia, Megaloblastic anaemia, Haemolytic anaemia, Vitamin B12-Folate deficiency anaemia, sideroblastic anaemia, aplastic anaemia, sickle cell anaemia.Polycythemiavera. Plasma cell disorders.***Leukemias:*** Classification, Blood Picture, Differentiation of Blast Cells.***Thalassaemia:*** Classification, blood picture & laboratory diagnosis.	20
	Total Hours	**60**

References:

1. Textbook of Medical Laboratory Technology by Praful B. Godkar
2. Medical laboratory Technology by KL Mukherjee Volume-I
3. Haematology for students Practitioners by RamnikSood
4. Handbook of Medical Laboratory Technology (IInd edition) by V.H. Talib
5. Haematology (International edition) Emmanuel C.BesaHarwal Publisher
6. Practical Haematology by JB Dacie
7. Practical Haematology (8th edition) by Sir John 8. Clinical Haematology by Christopher A. Ludlam.

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
30%	25%	25%	15%	5%	0%

Instructional Method:

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

e. The internal evaluation will be done based on continuous evaluation of students in the classroom in the form of attendance, assignments, verbal interactions etc.

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