

<b>INSTITUTE</b>	<b>FACULTY OF SCIENCE</b>
<b>PROGRAM</b>	<b>POSTGRADUATE DIPLOMA IN MEDICAL LABORATORY TECHNOLOGY</b>
<b>SEMESTER</b>	<b>1</b>
<b>COURSE TITLE</b>	<b>BASIC HEMATOLOGY</b>
<b>COURSE CODE</b>	<b>02ML0102</b>
<b>COURSE CREDITS</b>	<b>4</b>

**Objective:**

- 1 To impart students with essential knowledge of principles of blood analysis
- 2 To impart students with essential knowledge of principles of blood analysis.
- 3 To provide deep insights of principles and analysis of pathological samples and associated diseases.

**Course Outcomes:** After completion of this course, student will be able to:

- 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 hematology.
- 4 Students will become well versed with the identification and diagnosis of various types of blood abnormalities.

**Pre-requisite of course:**To impart students with essential knowledge of principles of blood analysis.

**Teaching and Examination Scheme**

<b>Theory Hours</b>	<b>Tutorial Hours</b>	<b>Practical Hours</b>	<b>ESE</b>	<b>IA</b>	<b>CSE</b>	<b>Viva</b>	<b>Term Work</b>
4	0	0	50	30	20	0	0

<b>Contents : Unit</b>	<b>Topics</b>	<b>Contact Hours</b>
1	<b>Immunohaematology</b> Introduction & history. Hematopoiesis and Human 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.	
2	<b>Blood Histology</b> 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.	
3	<b>Blood Composition Analysis</b> 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.	
4	<b>Blood Abnormalities</b> 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. Polycythemia vera. Plasma cell disorders. Leukemias: Classification, Blood Picture, Differentiation of Blast Cells. Thalassaemia: Classification, blood picture & laboratory diagnosis.	
<b>Total Hours</b>		

**Textbook :**

- 1 . Medical laboratory Technology , KL Mukherjee, Springer, 2008

**References:**

- 1 . Medical laboratory Technology , . Medical laboratory Technology , KL Mukherjee , Springer, 2008
- 2 Handbook of Medical Laboratory Technology , Handbook of Medical Laboratory Technology , V.H. Talib, Elsevier, 2010

### Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as 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 / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
30.00	25.00	20.00	15.00	5.00	

### Instructional Method:

- 1 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.
- 2 The internal evaluation will be done based on continuous evaluation of students in the classroom in the form of attendance, assignments, verbal interactions etc.
- 3 Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.