



Course Title: Hematology and Serology
Course Code: BIOT302
Credit Units: 04

L	T	P/S	SW/FW	TOTAL CREDIT UNITS
3	-	2	-	04

Course Objectives:

The aim of this course is to understand the components of blood and their significance in the blood related pathology

Pre-requisites: Biochemistry and Human physiology

Student Learning Outcomes:

- Explain and apply basic principles of hematology, safety measures, universal precautions, fundamentals of body fluids and blood physiology
- Demonstrate a working comprehension of the procedural aspects of laboratory testing and ethical standards of practice in hematology.
- Demonstrate technical skills by following established procedures for collecting and processing biological specimens for analysis.

Course Contents/Syllabus- Theory:

	Weightage (%)
Module I Origin and Development of Blood cells	25
Origin and Development of Blood cells, Hematopoietic stem cells, Mature Erythrocytes and leukocytes, Megakaryocytes and platelets, Nutritional factors in the production and function of RBC, Iron metabolism. Structure and function of Hemoglobin , leukocytes functions (phagocytosis, chemotaxis)	
Module II Disorders of Red Blood cells	30
General aspect of Anemias, classification and morphology of megaloblastic Anemias, Iron deficiency, Pernicious Anemias (etiology, pathogenesis, clinical manifestation), Hemoglobinopathies, sickle cell Anemia, Thalassemia	

(Classification and clinical manifestations)	
Module III Hematological malignancies	25
WHO and FAB Classification of leukemia, Acute leukemia (ALL and AML) and chronic leukemia (CLL and CML), Lymphomas (Hodgkins and Non-Hodgkins lymphoma, Burkitt lymphoma)	
Module IV Blood coagulation and bleeding disorders	20
Blood coagulation cascade bleeding disorders, (congenital and acquired), Components and fractionation of Blood (serum, plasma) ABO blood grouping (ABO, Rh and Lewis factors, etc), blood donors; compatibility testing and adverse effects of transfusion, complete, transfusion hazards (renal shut down)	
<p>List of Experiments:</p> <ul style="list-style-type: none"> • Collection and handling of blood samples • Preparation of anticoagulants • Preparation and staining of blood smear • Estimation of Hemoglobin in a given blood sample • Isolation of Buffy coat from the whole blood by using Density gradient centrifugation method • Counting of White blood cells and red blood cells using hemocytometer • Blood grouping using slide agglutination method 	

Pedagogy for Course Delivery:

Lectures: 39

Tutorial: 0

Presentation/ Seminar: 4

Class Test: 02

Total: 45

Lab/ Practical details, if applicable:

Tutorial: 0

Practical: 28

Class Test: 01

Viva: 01

Total: 30

Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)	End Term Examination
75	25	100

Theory Assessment (L&T):

Continuous Assessment/Internal Assessment						End Term Examination
Components (Drop down)	Class Test 1	Class Test 2	Home Assignment	Presentation/ Seminar	Attendance	
Weightage (%)	5	10	10	-	5	70

Lab/ Practical/ Studio Assessment:

	Continuous Assessment/Internal Assessment				End Term Examination			
Components (Drop down)	Performance	Lab record	viva	Attendance	Lab record	Performance	Viva	Total
Weightage (%)	15	5	5	5	10	50	10	100

Text & References:

- Text Book of Medical Physiology , 11th Edition, Guyton & Hall , 1999, ISBN 0-7216-0240-1
- Hoffman: Hematology: Basic Principles and Practice, 3rd ed., Copyright © 2000 Churchill Livingstone, Inc. ISBN; 9780443079542
- Molecular hematology 2nd Edition D Provan and J Gribben (2005). ISBN: 1-4051-1255-7