

COURSE/MODULE SYLLABUS

HEMATOLOGY (2020-2021)

Department of Pathological Analysis (2nd stage)

Paytaxt Private Institute

Practical: M. Lanja Jalal Mahmood + M. Safin Tahsin Hayass

Theory: M. Shukur Wasman Smail

Curriculum outline and syllabus for Hematology (theory+practical) 2+2 Hrs

Duration of the course: 8 months

The lectures of this course are describing the basic concepts of hematology with principles of blood testing; both manual and currently available fully automated diagnostic tools. The course includes definition of the science of hematology, hematopoiesis, blood components and function etc. In addition, the manual automations in hematology and the common pathological blood disorders will also be covered.

COURSE OBJECTIVES

The goals of this course are to:

- (1) Let the students understand the human blood and its disorders based on an up-to-date knowledge and in a simple stylish way.
- (2) Familiarize students with the pathophysiological background of main blood disorders.

COURSE LEARNING OUTCOMES

By the end of this course, the students SHOULD be able to:

1. Understand the principles of hematology, both blood physiology, functions, and disorders.
2. Master the pathobiology of hematological disorders encountering in hospital practice.
3. Interpret diagnostic test results and erroneous test results and able to fix them.

Instructors:

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Compulsory learning sources	1. Ronald Hoffman, Edward J. Benz Jr., Leslie E. Silberstein, Helen Heslop, Jeffrey Weitz, John Anastasi - Hematology: Basic Principles and Practice, Elsevier Health Sciences, 2012 2. Betty Ciesla, Hematology in Practice, F.A. Davis, 2011
Additional learning sources	Shauna Christine Anderson, Keila Poulsen, Atlas of Hematology, Lippincott Williams & Wilkins, 2003.
Additional requirements	

Course/Module Content

N	Topic of the lecture	Literature
1	Anatomy / physiology of bone marrow; Ontogeny of haematopoiesis Stem cell biology and haematopoietic differentiation pathways; Control of haematopoiesis – roles of cytokines, growth factors and bone marrow microenvironment (niches) Bone marrow failure: Aplastic anaemia	1. p. 78-96; 350-370. Lecture handouts (provided by the author)
2	Erythropoiesis; Normal red cell structure (including membrane cytoskeleton); Normal red cell metabolism (including generation of ATP, 2,3 DPG and antioxidant defense); Normal haemoglobin (structure and function) Red cell senescence and removal by RE system	1. p. 258-279; Lecture handouts
3	Leucopoiesis; Normal function of granulocytes, monocytes and lymphocytes; Anatomy of immune system (primary and secondary lymphoid organs) Innate immunity and the inflammatory response	1. p. 280-291; 171-181 Lecture handouts.
4	Anaemia: <ul style="list-style-type: none"> • Definition; • Pathophysiology and clinical signs/symptoms; • classification by cause; • morphological classification Erythrocytosis Causes and differential diagnosis	1. p. 450-456; 406-417. Lecture handouts
5	Iron metabolism Red cell disorders relating to iron: <ul style="list-style-type: none"> • Iron deficiency anaemia • Anaemia of chronic inflammation • Sideroblastic anaemia Haemochromatosis and other iron overload disorders	1. p. 437-449 Lecture handouts
6	Megaloblastic anaemia due to vit B12 or folate deficiency Haemolytic anaemia <ul style="list-style-type: none"> • Definition • Hereditary causes (spherocytosis, elliptocytosis, enzymopathies, etc.) Acquired causes (immune, non-immune including <u>malaria</u> and <u>PNH</u>)	1. p. 473-504; 614-638 Lecture handouts
7	Genetic disorders of haemoglobin:	1. p. 457-472; 505-

	<ul style="list-style-type: none"> • Structure of the haemoglobin genes • Thalassaemia syndromes Structural haemoglobinopathies	535 Lecture handouts
8	Non-malignant white cell disorders: <ul style="list-style-type: none"> • Secondary leucocytosis and effects of bacterial / viral infection (including infectious mononucleosis) • Agranulocytosis Molecular pathogenesis of leukaemia.	1. p. 640-720; 728-780 Lecture handouts
9	Acute leukaemias <ul style="list-style-type: none"> • Classification: FAB / WHO Myelodysplastic syndromes <ul style="list-style-type: none"> • Classification: FAB / WHO Aspects of treatment (chemotherapy – targeted and non-targeted; HSC transplantation)	1. p. 853-960; Lecture handouts
10	Chronic myeloid leukaemia Myeloproliferative disorders (PV, ET, MF)	1. p. 981-997 Lecture handouts
11.	Lymphoproliferative disorders: <ul style="list-style-type: none"> • Chronic lymphocytic leukaemia • Hodgkins lymphoma • Non-Hodgkins lymphoma Multiple Myeloma / Waldenstroms macroglobulinaemia	1. p. 1170-1191; 1112-1169 Lecture handouts
12.	Haemostasis: <ul style="list-style-type: none"> • Components of haemostasis system Haemostasis mechanisms	1. p. 1774-1808 Lecture handouts
13	Bleeding disorders <ul style="list-style-type: none"> • Hereditary coagulation defects • von Willebrands disease Platelet disorders <ul style="list-style-type: none"> • Thrombocytopenia (immune and non-immune) • Functional disorders (hereditary and acquired) • Acquired haemostasis disorders (DIC, liver disease, TTP) 	1. p. 1821-1856; 1867-1939 Lecture handouts
14	Thrombotic disorders Thrombophilia (hereditary and acquired eg APS)	1. p2048-2059 Lecture handouts
15	Therapeutic aspects of haemostasis: Anticoagulant therapy <ul style="list-style-type: none"> • Heparin • Warfarin • New oral anticoagulants 	1. p. 2102-2119; Lecture handouts

	Treatment of bleeding disorders <ul style="list-style-type: none"> • Factor replacement therapy (including consideration of hazards such as viral transmission and inhibitor formation) • DDAVP • Recombinant VIIa • Gene therapy • Thrombolytic therapy 	
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Topic of the laboratory work

Syllabus	
Introduction to haematology and blood sampling	1 st week
Red blood cell count	2 nd week
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Estimation of haemoglobin concentration	4 th week
White blood cell count	5 th week
Erythrocyte sedimentation rate (ESR)	6 th week
Anemia and red blood cells indices	7 th week
Reticulocyte count	8 th week
.....	9 th week
Preparation of blood Smear	10 th week
.....	11 th week
Platelet smear	12 th week
.....	13 th week
Gross match	
.....	
Clotting and bleeding time	
Coombs test	
Coulter	
Extra notes:	
Changing in the title of the subject or sequence of the lectures is possible according to update information available.	