Module (Course Syllabus) Catalogue

2023-2024

College/ Institute	Koya Technical Institute		
Department	Medical Lab. department/Taqtaq-evening/Morning		
Module Name	Hematopathology		
Module Code	HEP303		
Degree	Technical Diploma ✔ Bachelor High Diploma Master PhD		
Semester	3		
Qualification	M.Sc. in biology		
Scientific Title	Assistant Lecturer		
ECTS (Credits)	5		
Module type	Prerequisite Core ✔ Assist.		
Weekly hours	6		
Weekly hours (Theory)	(2)hrs Class	(3)Total hrs Workload	
Weekly hours (Practical)	(2)hrs Class	(1)Total hrs Workload	
Number of Weeks	12		
Lecturer (Theory)	Dlshad Saadallah Othman		
E-Mail & Mobile NO.	dlshad.othman@ epu.edu.iq 07501203648		
Lecturer (Practical)	Dashty mauloud hamadamin		
E-Mail & Mobile NO.	07501093872		
Websites			

Course Book

Course Description	**Hematology** is the study of blood and blood disorders. Hematologists and hematopathologists are highly trained healthcare providers who specialize in diseases of the blood and blood components. These include blood and bone marrow cells. Hematological tests can help diagnose anemia, infection, hemophilia, blood-clotting disorders, and leukemia. **Hematopathology** includes the study of etiology, diagnosis, treatment, prognosis, and prevention of blood diseases. The laboratory work that goes into the study of blood is frequently performed by a medical technologist. The main subject areas will include blood cell morphology and function, the pathophysiology and genetics of hematological disorders and malignancies, blood testing and typing, and the processes governing hematopoiesis. Blood cell physiology, biochemistry and blood flow are covered in this course. This text is designed for hematologists, pathologists and laboratory staff in training and in practice. The work presented in this course will be of benefit to medical students and to researchers of hematology and blood flow in the microcirculation.
Course objectives	1. Understand blood cell production (Hematopoiesis) 2. Understand the particular functions of blood cells, blood proteins, and other blood components. 3. Understand blood cell disorders. 4. Understand established information and recent clinical advances in coagulopathies, anticoagulant and thrombolytic process and therapies. 5. Understand blood and bone marrow morphology and hematopathology. 6. Be familiar with the diagnosis, evaluation, and management of hematologic malignancies.
Student's obligation	It is necessary all the students listen and write notes and their obligations throughout the academic year and the attendance and completion of all tests, exams. It should also practice in the laboratory or another place depending on the lecture.
Required Learning Materials	• Attendance 85-90% of lectures. Completion of all the requirements quizes, exams, reports,

<table>
<tr><td></td><td colspan="5">assignments, siminars, ….etc.
Participation in the laboratory works (practical lectures).
Required Learning Materials
The lectures showed by data show and the explanations discussed in the hall and at the same time the students will have a copies of the lectures.
The lectures will be available on line (Moodle platform)
Lab. Instruments and materials will used in Practical lectures..</td></tr>
<tr><td rowspan="11">Evaluation</td><td colspan="2">Task</td><td>Weight (Marks)</td><td>Due Week</td><td>Relevant Learning Outcome</td></tr>
<tr><td colspan="2">Paper Review</td><td></td><td></td><td></td></tr>
<tr><td rowspan="6">Assignments</td><td>Homework</td><td>5</td><td></td><td></td></tr>
<tr><td>Class Activity</td><td>2</td><td></td><td></td></tr>
<tr><td>Report</td><td rowspan="4">10</td><td></td><td></td></tr>
<tr><td>Seminar</td><td></td><td></td></tr>
<tr><td>Essay</td><td></td><td></td></tr>
<tr><td>Project</td><td></td><td></td></tr>
<tr><td colspan="2">Quiz</td><td>8</td><td></td><td></td></tr>
<tr><td colspan="2">Lab. reports</td><td>10</td><td></td><td></td></tr>
<tr><td colspan="2">Midterm Exam</td><td>25</td><td></td><td></td></tr>
<tr><td colspan="2">Final Exam</td><td>40</td><td></td><td></td></tr>
<tr><td colspan="2">Total</td><td>100</td><td></td><td></td></tr>
<tr><td>Specific learning outcome:</td><td colspan="5">Students after this course will be able to identify the blood cells types and the pathway of production of each type. Then Learning the functions of blood cells and distinguishing its normality or abnormality. They will be able to identify the stains used in identifying diseases blood cells under the microscope. In addition to learning practically how to collect the blood samples and how to prepare it for examinations and how to read the results.</td></tr>
<tr><td>Course References:</td><td colspan="5">• "Blood Cell - An Overview of Studies in Hematology" edited by Terry E. Moschandreou, ISBN 978-953-51-0753-8, InTech, September 9, 2012
• Handin, Robert I.; Samuel E. Lux; Thomas P. Stossel (2003). Blood: Principles and Practice of Hematology (2nd ed.). Philadelphia: Lippincott Williams and Wilkins. p. 471.ISBN 9780781719933. Retrieved 2013-06-18.</td></tr>
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	• Kenneth Kaushansky et al., eds. (2010). Williams hematology (8th ed.). New York: McGraw-Hill Medical. ISBN 0071621512.

Course topics (Theory)	Weeks	Learning Outcome
Overview and introduction to hematology, and hematopathology	1	History of the science of hematology, Approach to hematology, Biohazard precautions and laboratory safety
Haematopoiesis, Composition of the blood	2	Site of hematopoiesis, Hemopoietic stem and progenitor cell, Bone Marrow (BM) microenvironment, Stem cell division and differentiation
Normal hemoglobin and abnormal hemoglobin, Genetic disorders of hemoglobin, Thalassemia	3	Hemoglobin (Hb), Hb synthesis, structures and functions Thalassemias α-Thalassemias β-Thalassemias Thalassemia intermedia Sickle cell anemia Laboratory investigation of thalassemia
Normal red blood cells, Red blood cell abnormalities	4	Red blood cell (RBC) production, Erythrocyte physiology and functions, Hemoglobin (Hb), Hb synthesis, structures and functions Erythrocyte Lifecycle, Disorders of Erythrocytes, Red cell morphologic disorders and diseases associated with blood disorders
Normal white blood cells, White blood cell disorders	5	White blood cell (leukocyte) production, Classification of leukocytes, Functions of leukocytes
Homeostasis and platelet, Coagulation cascades	6	Platelet production, structure and function, Primary hemostasis, Platelet adhesion and aggregation
Leukaemia	7	Leucocytosis

Bleeding, Platelet disorders; Thrombocytopenia and thrombocytosis.	8	Bleeding, Platelet disorders; Thrombocyte decreasing and increasing process
Thrombosis	9	Secondary hemostasis, Coagulation cascade, Fibrinolysis
Hemochromatosis	10	a condition in which your body stores too much iron. It's often genetic. It can cause serious damage to your body, including to your heart, liver and pancreas.
Lymphomas Hodgkin and non-Hodgkin disease	11	Lymphoma is a form of cancer that affects the lymphocytes, a type of white blood cell that plays an important role in the immune system
Anemia	12	Microcytic, normocytic and macrocytic anemias, Classification of anemia according to pathophysiologic characteristics: Microcytic Anemias Megaloblastic anemias: • Folic acid deficiency • Vitamin b12 deficiency (pernicious anemia) Laboratory diagnosis of anemia
Practical Topics	**Weeks**	**Learning Outcome**
Blood collection procedures, Anticoagulants	1	
Estimation of erythrocyte sedimentation rate (ESR)	2	
Hemoglobin HB measurement tests	3	
Packed Cell Volume test (PCV) (Hematocrit)	4	
Red blood cell count	5	

White blood cell count	6	
Platelet count	7	
Normal and abnormal shapes of erythrocytes	8	
Normal and abnormal shapes of leukocytes	9	
Differential WBC count	10	
Red blood cell indices (MCV, MCH, MCHC and RDW)	11	
Platelets indices (MPV, PCT, PDW and L-CPR)	12	
Reticulocyte count	13	
Preparation of peripheral blood film	14	

Questions Example Design

Compositional:

1. What are the leukocytes responsible for?
2. Enumerate the normal hemoglobins. And explain its contents.
3. Draw a diagram explaining the levels of platelet formation.

True or false type of exams:

1. Proerythroblasts develop into basophils, neutrophils, eosinophils.
2. Ecchymosed is subcutaneous haematoma larger than 2 cm.

Fill in the blanks:

1. Active..... cleaves plasminogen to plasmin which then dissolves the fibrin.
2. The organic molecule of heme group when straightened out is called..... .

What are the differences between hematology and hematopathology?

What are the types of hematoma?

Extra notes:

External Evaluator

These course catalogues is well organized and gives proper information to students and

well explain about the outcome of students.

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MSc in Physiology