Republic of Yemen

Ministry of Higher Education & Scientific Research

21 SEPTEMBER UNIVERSITY of MEDICALS & APPLIEED

SCIENCES

Faculty of Laboratory medicine

Department of Hematology

Course Specification Hematology I (Introduction to blood)

Course No. (03,03,334)

2022/2023

I. Course Identification and General Information:						
1	Course Title:	Hematology I (Introduction to blood)				
2	Course Code & Number:	03,03,334				
3	Credit Hours:	Theory Hours				
		Lecture	Exercise	Practical	Credit Hours	
		2	0	2	3	
4	Study Level/ Semester at which this Course is offered:	2nd Level / 1st Semester				
5	Prerequisite (if any):	Hematology				
6	Co –Requisite (if any):					
7	Program (s) in which the course is offered:	Bachelor in laboratory medicine				
8	Language of Teaching the Course:	English				
9	Study System:	semester				
10	Mode of Delivery:	Regular				
11	Location of Teaching the Course:	University Campus				
12	Prepared by:	Dr. bushra alabsi				
13	Date of Approval:	**2023/3/11**				

	II. Course Objectives and Learning Outcomes (description, objective, course learning outcome)
	A. Course Description:
	The course provides knowledge about origin, formation, physiological basis, and function of blood cells. Students must learn Hematopoiesis in general, erythropoiesis, leukopoiesis and thrombopoiesis through theoretical and practical hours.

III. Course Intended Learning Outcomes (CILOs)		**Referenced PILOs**
	A. Knowledge and Understanding: Upon successful completion of the course, students will be able to:	
a1	**Identify** the hematopoietic tissues and organs.	A1
a2	**Describe** the morphological features of different blood cells RBC, WBC and PLT maturation series.	A2
	B. Intellectual Skills: Upon successful completion of the course, students will be able to:	
b1	Perform laboratory tests in hematology lab.	B3
b2	Identify maturation stages of WBC, RBC and PLT under microscope	B2
	C. Professional and Practical Skills: Upon successful completion of the course, students will be able to:	
c1	Demonstrate ethical and professional behavior, interest, enthusiasm, and willingness to learn as seen through active participation.	C2
c2	Act responsibly and reliably as measured by punctuality, attendance, dependability, and quality of work.	C2
	D. Transferable Skills: Upon successful completion of the course, students will be able to:	
d1	Relate the morphological features of different blood cells.	**D1**

C. Alignment Course Intended Learning Outcomes with Teaching Strategies and Assessment methods :			
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:			
	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1	Identify the hematopoietic tissues and organs.	Lectures, seminars	Exams quiz
a2	Describe the morphological features of different blood cells RBC, WBC and PLT maturation series.	Lectures	Exams
(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:			
	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	Perform laboratory tests in hematology lab.	Laboratory practical,	Assignment Home work exams
b2	Identify maturation stages of WBC, RBC and PLT under microscope	Lectures, Laboratory practical,	Home work exams
(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:			
	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1	Demonstrate ethical and professional behavior.	Lectures, Laboratory practical,	Practical exam
c2	Act responsibly and reliably as measured by punctuality, attendance, dependability, and quality of work.	Lectures, Laboratory practical,	Practical exam
(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:			
	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	Relate the morphological features of different blood cells.	Seminar	Exams

IV. Course Content:

A – Theoretical Aspect:

NO.	Units/Topics List	Subtopics List	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1	Introduction blood	-Definition -Function -components of blood in general, the components of blood and their importance	1	2	a1,b2,c1,d1
2	Hematopoiesis:	origin and development of blood cells from embryonic life to adult	1	2	a1,a2,b1,b2,c1,c2,d1
3	Characteristic of hematopoietic organs	-Primary hematopoietic organs and tissues: bone marrow structure and function	1	2	a1,a2,b1,b2,c1,c2,d1
4	Primary hematopoietic organs and tissues: 2- Thymus, secondary lymphoid tissues: 1- spleen 2- lymph nodes, hematopoietic growth factors	Secondary hematopoietic organs: 1-spleen 2-lymph nodes, hematopoietic growth factors	1	2	a1,a2,b1,b2,c1,c2,d1
5	Erythropoiesis:	origin and development of erythroid series.	1	2	a1,a2,b1,b2,c1,c2,d1
6	Mid-term exam		1	1	
7	Erythropoiesis:	Nutritional and regulator factors associated with erythropoiesis.	1	2	a1,a2,b1,b2,c1,c2,d1
8	Leukopoiesis:	origin and development of myeloid series	1	2	a1,a2,b1,b2,c1,c2,d1
9	Leukopoiesis:	origin and development of	1	2	a1,a2,b1,b2,c1,c2,d1

		monocytes series			
10	Leukopoiesis:	origin and development of lymphoid series	1	2	a1,a2,b1,b2,c1,c2,d1
11	Leukopoiesis:	Plasma cell development and maturation, control mechanism of leukopoiesis	1	2	a1,a2,b1,b2,c1,c2,d1
12	Thrombopoiesis:	origin and development of thrombocytes	1	2	a1,a2,b1,b2,c1,c2,d1
13	Final Theoretical Exam		**1**		
	Number of Weeks /and Units Per Semester		**14**	**23**	

B - Practical Aspect: (if any)

Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1	Venous blood collection, types of anticoagulants tubes, types of instruments and apparatus used in hematology lab	**1**	2	c1
2	Parts of a microscope and how to use, maintain and handle it	**1**	2	c2
3	Packed cell volume (PCV)	**1**	2	c2
4	How to use of hemocytometer for blood cell count	**1**	2	c2
5	Red blood cell count by hemocytometer and calculation of red blood cell indices	**1**	2	c1, c2
6	White blood cell count by hemocytometer	**1**	2	c1, c2
7	Blood film preparation	**1**	2	c2
8	blood film staining and differential count	**1**	2	c1, c2
9	Differential count and writing of blood film report	**1**	2	c1, c2
10	Erythrocyte sedimentation rate (ESR)	**1**	2	c1, c2
Number of Weeks /and Units Per Semester		**12**	**20**	

V. Teaching Strategies of the Course:	
1-	Lectures:
2-	practical session
3-	Seminars

VI. Assessment Methods of the Course:

No	Assignment
1	Written Exams (Short Essays) and Quizzes
2	Multiple Choice Questions (MCQ)
3	Practical Exams (PE)

VII. Assignments:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	**Midterm Exam**	8	20	20%	a1,a2,b1,b2,d1
2	**Practical exam**	12	30	30%	c1,c2,d1
3	**Final Exam**	16	50	50%	a1,a2,b1,b2,d1
	Total	100		100%	

VIII. Learning Resources:

1- Required Textbook(s).	
1-	A. Victor Hoffbrand- 2016- Hoffbrand's Essential Hematology- Seventh edition
2-	Mary Louise Turgeon – 2018- Clinical Hematology- Sixth edition
2- Essential References.	
1-	Shirlyn McKenzie, Kristin Landis-Piwowar, Linne Williams (2019). Clinical Laboratory Hematology, 4th Edition, Pearson Publishers. ISBN-13: 978-0134709390; ISBN-10: 013470939X
2-	

3- Electronic Materials and Web Sites *etc*.	
1-	https://www.britannica.com/science/blood-biochemistry

IX. *Course Policies:*	
1	**Class Attendance:** Class Attendance is mandatory. A student is considered absent and shall be banned from taking the final exam if his/her absence exceeds 25% of total classes.
2	**Tardiness:** -If the student dose not attend for more than 6 times, the student will be obligated to withdrew from the course
3	**Exam Attendance/Punctuality:** No student shall be allowed to the exam hall after 30 minutes of the start time and shall not leave the hall before half of the exam time has passed.
4	**Assignments & Projects:** Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same.
5	**Cheating:** Cheating is an act of fraud that results in the cancelation of the student's exam or assignment. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
6	**Forgery and Impersonation:** Forgery/Impersonation is an act of fraud that results in the cancelation of the student's exam, assignment or project. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
7	**Other policies:** The University official regulations in force will be strictly observed and students shall comply with all rules and regulations of the examination set by the Department, Faculty and University Administration