



Republic of Yemen  
Ministry of Higher Education & Scientific Research  
**21 SEPTEMBER UNIVERSITY of MEDICALS & APPLIED**  
**SCIENCES**



Faculty of Laboratory medicine..

**Department of Hematology**  
Course Specification of Advanced Hematology II (Red Blood Cell Disorders)  
Course No. (03.13.312)  
**2022/2023**

Prepared by:	Reviewed by:	Heamatolgy Department Charge D'affairs	Vice Dean for Quality affairs	Dean of College:
- Dr. Abdulrahman Amer	. Dr Fuad Balkam	Dr\Gamil Taher Abdul Mughni	Dr\Gamil Taher Abdul Mughni	- Associate Prof. Dr. Ebtessam Al-Zabedi

### I. Course Identification and General Information:

1	<b>Course Title:</b>	Advanced Hematology II (Red Blood Cell Disorders)			
2	<b>Course Code &amp; Number:</b>	03.13.312			
3	<b>Credit Hours:</b>	Theory Hours			Credit Hours
		Lecture	Exercise	Practical	
		2	0	2	
4	<b>Study Level/ Semester at which this Course is offered:</b>	1 <sup>st</sup> Level / 1 <sup>st</sup> Semester			
5	<b>Pre –Requisite (if any):</b>	None			
6	<b>Co –Requisite (if any):</b>	None			
7	<b>Program (s) in which the Course is Offered:</b>	Master Degree Medical Diagnostic Hematology			
8	<b>Language of Teaching the Course:</b>	English			
9	<b>Study System:</b>	Semester			
10	<b>Mode of Delivery:</b>	Regular			
11	<b>Location of Teaching the Course:</b>	University Campus			
12	<b>Prepared by:</b>				
13	<b>Date of Approval:</b>	2022-2023			

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## II. Course Description:

This course provides an in-depth look at the pathophysiology, diagnosis, and management of advanced red blood cell disorders. Topics covered include: Anemias, Sickle cell disease, Thalassemia, Hemoglobinopathies and Acquired red blood cell disorders

## III. Alignment Course Intended Learning Outcomes with program outcomes

III. Course Intended Learning Outcomes (CILOs)		Referenced PILOs
<b>A. Knowledge and Understanding:</b> Upon successful completion of the course, students will be able to:		
a1	Understand the different types, causes, pathophysiology, clinical features, laboratory diagnosis and treatment of anemia.	A1
<b>B. Intellectual Skills:</b> Upon successful completion of the course, students will be able to:		
b1	Interpret the clinical and laboratory information to understand and classify different types of anemia.	B1
<b>C. Professional and Practical Skills:</b> Upon successful completion of the course, students will be able to:		
c1	Evaluate the latest research in the field of red blood cell disorders	C1
<b>D. Transferable Skills:</b> Upon successful completion of the course, students will be able to:		
d1		D1

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IV. 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	<b>Understand</b> the different types, causes, pathophysiology, clinical features, laboratory diagnosis and treatment of anemia. of anaemia	Lecture	Exam
(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:			
	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	<b>Interpret</b> the clinical and laboratory information to understand and classify different types of anemia.	Lecture	Exam
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	<b>Evaluate</b> the latest research in the field of red blood cell disorders	Lecture Discussion Presentation	Exam Discussion Presentation
(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:			
	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1		Lecture Discussion Presentation	Exam Discussion Presentation

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Course Content:					
A – Theoretical Aspect:					
Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes
1	1. Introduction to Red Blood Cell Disorders:.	An overview of the different types of red blood cell disorders, including anemias, hemoglobinopathies, and red blood cell membrane disorders	1	2	a1,b1,c1
2	2. Red Blood Cell Production and Destruction:	The process of red blood cell production and breakdown, including the role of erythropoietin, the bone marrow, and the spleen.	1	2	a1,b1,c1
3	3. Anemia:	A detailed look at the causes, symptoms, and treatment of anemia, including iron deficiency anemia, hemolytic anemia, and aplastic anemia.	2	4	a1,b1,c1
4	Hemoglobinopathies	A discussion of the genetic mutations that can cause abnormal hemoglobin production, including sickle cell anemia and thalassemia.	2	4	a1,b1,c1
5	Red Blood Cell Membrane Disorders	An examination of the genetic mutations that can affect the structure and function of red blood cell membranes, including hereditary spherocytosis and	2	4	a1,b1,c1

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		elliptocytosis.			
6	Red Blood Cell Enzyme Deficiencies:	A look at the genetic mutations that can affect the enzymes involved in red blood cell metabolism, including glucose-6-phosphate dehydrogenase deficiency.	1	2	a1,b1,c1
7	7. Red Blood Cell Transfusion:	An overview of the indications for red blood cell transfusion, the types of blood products available, and the risks and benefits of transfusion.	1	2	a1,b1,c1
8	8. Hemolytic Disease of the Newborn:	A discussion of the causes, prevention, and treatment of hemolytic disease of the newborn, including Rh incompatibility and ABO incompatibility.	1	2	a1,b1,c1
9	9. Other Red Blood Cell Disorders:	A brief overview of less common red blood cell disorders, including paroxysmal nocturnal hemoglobinuria and cold agglutinin disease.	1	2	a1,b1,c1
10	Case Studies:	Application of the principles learned in the course to real-life cases, including diagnosis and treatment plans.	2	4	a1,b1,c1
12	Final exam		1	2	a1,b1,c1
<b>Number of Weeks /and Units Per Semester</b>			16	<b>32</b>	

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### V. Teaching Strategies of the Course:

1-	Lectures
2-	Practical session
3-	Self leaning
4-	<b>Group discussion</b>
	Case study analysis

### VI. Assessment Methods of the Course:

No	Assignment
1	<b>Written Exams ( Essays) and Quizzes</b>
2	Structured Oral Exams
4	Objective Structured Practical Exams (OSPE)
5	Student presentation
6	Case study analysis

### VII. Assignments:

No.	Assignments	Week Due	Mark	Proportion of Final Assessment	Aligned CILOs (symbols)
2	Activity	Throughout the semester	10	10%	a1,b1,c1
3	Practical Report	Throughout the semester	10	10 %	a1,b1,c1
4	Practical exam	12	20	20%	a1,b1,c1
5	Final Exam	14	60	60%	a1,b1,c1
<b>Total</b>					

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## X. Learning Resources:

· Written in the following order: ( Author - Year of publication – Title – Edition – Place of publication – Publisher).

### 1- Required Textbook(s) ( maximum two ).

- |    |   |
|----|---|
| 1- | Basic Principles and Practice , 2017 by Ronald Hoffman et al. |
| 2- | Williams Hematology ,2010 ,by Kenneth Kaushansky et al.       |

### 2- Essential References.

- |    |  |
|----|--|
| 1- | Clinical Hematology, Theory and Procedures by Mary Louise Turgeon 2018 .           |
| 2- | Clinical Principles and Applications by Bernadette F. Rodak and George A. Fritsma. |

### 3- Electronic Materials and Web Sites etc.

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| 1- | The American Society of Hematology website<br><a href="http://www.hematology.org">www.hematology.org</a>   |
| 2- | The National Institutes of Health, National Heart, Lung, and Blood Institute<br>Website <a href="http://www.nhlbi.nih.gov">www.nhlbi.nih.gov</a> |
| 3- | The World Health Organization website ( <a href="http://www.who.int">www.who.int</a> )   |
| 4- | The Centers for Disease Control and Prevention website ( <a href="http://www.cdc.gov">www.cdc.gov</a> )  |
| 5  | Medscape Hematology ( <a href="http://www.medscape.com/hematology">www.medscape.com/hematology</a> )   |
| 6  | Blood Journal ( <a href="http://www.bloodjournal.org">www.bloodjournal.org</a> )   |

## XI. Course Policies:

1	<b>Class Attendance:</b> 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	<b>Tardiness:</b> -If the student dose not attend for more than 6 times, the student will be obligated to withdrew from the course
3	<b>Exam Attendance/Punctuality:</b> 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	<b>Assignments &amp; Projects:</b> Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose

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	the mark allocated for the same.
5	<b>Cheating:</b> 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	<b>Forgery and Impersonation:</b> 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	<b>Other policies:</b> 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

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