

Course Syllabus

1	Course title	Hematology I	
2	Course number	0308362	
3	Credit hours	3 hrs	
	Contact hours (theory, practical)	(2 theory, 3 practical/week)	
4	Prerequisites/co-requisites	0308232	
5	Program title	Clinical Laboratory Sciences	
6	Program code	0308	
7	Awarding institution	The University of Jordan	
8	School	Science	
9	Department	Clinical Laboratory Sciences	
10	Course level	3 rd year	
11	Year of study and semester (s)	Spring Semester 2023/2024	
12	Other department (s) involved in teaching the course		
13	Main teaching language	English	
14	Delivery method	<input checked="" type="checkbox"/> Face to face learning <input type="checkbox"/> Blended <input type="checkbox"/> Fully online	
15	Online platforms(s)	<input checked="" type="checkbox"/> Moodle <input type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype <input type="checkbox"/> Zoom <input type="checkbox"/> Others: Google meet	
16	Issuing/Revision Date	18.02.2024	

17 Course Coordinator:

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18 Other instructors:

Name: **Imad Jawabreh**
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Contact hours: **11-12 Sun, Tue, Thu**

19 Course Description:

Hematology is the study of blood cells in normal and abnormal conditions. Students will be instructed in the theory and practical application of hematology procedures, blood cell maturation sequences, and normal and abnormal morphology with associated disease.

20 Course aims and outcomes:

A- Aims:

This course aims to introduce undergraduate student to basic physiology of RBCs, their function and related abnormalities. The students will study in detail red cell kinetics (production, functional life span, destruction) and the related hematological lab testing. The student will understand the different types of anemias and how to diagnose them by different hematological testing approaches.

B- Students Learning Outcomes (SLOs):

For purposes of mapping the course SLOs to the CLS program SLOs, at the successful completion of the physics program, graduates are expected to be able to:

SLO(1). Understand and apply the theoretical foundations of medical laboratory sciences to accurately calibrate and operate advanced laboratory equipment.

SLO(2). Demonstrate knowledge of safety protocols, Ministry of Health regulations, and environmental preservation practices when handling samples of pathogens and chemical/biological risks.

SOL(3). Acquire in-depth technical knowledge to stay abreast of scientific advancements and actively participate in local and global applied research in the field.

SOL(4). Perform diverse analyses and effectively interpret results for various clinical samples across laboratory disciplines such as hematology, clinical chemistry, microbiology, urine analysis, body fluids, molecular diagnostics, and immunology.

SOL(5). Apply practical training to solve complex problems, troubleshoot issues, and interpret results, ensuring a connection between data and specific medical conditions for precise diagnosis.

SOL(6). Show effective communication skills to convey information accurately and appropriately in a laboratory setting.

SOL(7). Demonstrate a commitment to lifelong learning and innovation by applying modern techniques, critically analyzing information, and contributing to the creation and application of new knowledge in medical laboratory sciences which fulfill the requirements of national and international CBD.

SOL(8). Uphold professional ethical behavior, ensuring the confidentiality of client information, and respecting client privacy throughout all aspects of laboratory work.

SOL(9). Apply managerial skills that align with quality assurance, accreditation, quality improvement, laboratory education, and resource management, showcasing competence in the effective administration of laboratory practices.

Descriptors	ILO/ID	Program SLOs	SLO (1)	SLO (3)	SLO (4)	SLO (5)	SLO (6)	SLO (8)
		Course SLOs						
Knowledge	A1	Understand the Kinetics of RBC production and destruction, RBC function, Hemoglobin and Iron Metabolism.	X					
	A2	Understand the different hematological routine, diagnostic and special tests.		X				
Skills	B1	Analyze and differentiate between the different RBCs disorders depending on different hematological lab values.			X	X		
	B2	Be able to communicate clinical hematology issues and related lab results.					X	X
Competence	C1	Apply knowledge to solve hematological testing problems and errors.		X	X			
	C2	Demonstrate critical thinking skills to analyze clinical hematology issues and demonstrate lab management skills.				X		

21. Topic Outline and Schedule:

Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
1	1.1	An Overview of Clinical Lab Hematology	A2	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	1.2	An Overview of Clinical Lab Hematology	A2	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	1.3	Introduction- Hematology Lab	A2, B1, B2	Face to Face		Synchronous	Exams and quizzes	
2	2.1	Hematopoiesis	A1	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	2.2	Hematopoiesis	A1	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	2.3	Manual Blood Cell counts-WBCs	A2, B1, B2	Face to Face		Synchronous	Exams and quizzes	
3	3.1	Hematopoiesis	A1	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	3.2	Erythrocyte production and Destruction	A1,A2	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.

	3.3	Manual Blood Cell counts- RBCs	A2, B1, B2	Face to Face		Synchronous	Exams and quizzes	
4	4.1	Erythrocyte production and Destruction	A1,A2	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	4.2	Erythrocyte production and Destruction	A1,A2	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	4.3	Micro hematocrit determination, RBC indices	A2, B1, B2	Face to Face		Synchronous	Exams and quizzes	
5	5.1	Erythrocyte Metabolism and Membrane Structure and Function	A1	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	5.2	Erythrocyte Metabolism and Membrane Structure and Function	A1	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	5.3	Hemoglobin determination	A2, B1, B2	Face to Face		Synchronous	Exams and quizzes	
6	6.1	Hemoglobin Metabolism	A1, A2	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	6.2	Hemoglobin Metabolism	A1, A2	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	6.3	Erythrocyte Sedimentation Rate	A2, B1, B2	Face to Face		Synchronous	Exams and quizzes	
7	7.1	Iron metabolism	A1, A2	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	7.2	Anemias: RBCs Morphology and Approach to Diagnosis	B1	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	7.3	Mid Term Exam-Lab	A2, B1, B2	Face to Face		Synchronous	Exams and quizzes	
8	8.1	Disorders of Iron and Heme Metabolism	B1,B2, C1	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	8.2	Disorders of Iron and Heme Metabolism	B1,B2, C1	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	8.3	Blood Film Preparation	A2, B1, B2	Face to Face		Synchronous	Exams and quizzes	
9	9.1	Anemias Caused by Defects of DNA Metabolism	B1,B2, C1	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	9.2	Anemias Caused by Defects of DNA Metabolism	B1,B2, C1	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	9.3	Blood Cell Morphology and Estimates	A2, B1, B2	Face to Face		Synchronous	Exams and quizzes	
10	10.1	Hemolytic Anemias-Non Immune Causes	B1,B2, C1, C2	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	10.2	Hemolytic Anemias-Non Immune Causes	B1,B2, C1, C2	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology,

								6 th Ed.
	10.3	WBC differential	A2, B1, B2	Face to Face		Synchronous	Exams and quizzes	
11	11.1	Hemolytic Anemias-Non Immune Causes	B1,B2, C1, C2	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	11.2	Hemolytic Anemias-Immune Causes	B1,B2, C1, C2	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	11.3	Abnormal Red Cell Morphology	A2, B1, B2	Face to Face		Synchronous	Exams and quizzes	
12	12.1	Hemolytic Anemias-Immune Causes	B1,B2, C1, C2	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	12.2	Hemolytic Anemias-Immune Causes	B1,B2, C1, C2	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	12.3	Abnormal Red Cell Morphology	A2, B1, B2	Face to Face		Synchronous	Exams and quizzes	
13	13.1	Hemoglobinopathies	B1,B2, C1	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	13.2	Hemoglobinopathies	B1,B2, C1	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	13.3	Abnormal WBC Morphology	A2, B1, B2	Face to Face		Synchronous	Exams and quizzes	
14	14.1	Hemoglobinopathies	B1,B2, C1	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	14.2	Thalassemia's	B1,B2, C1, C2	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	14.3	Coagulation Studies	A2, B1, B2	Face to Face		Synchronous	Exams and quizzes	
15	15.1	Thalassemia's	B1,B2, C1, C2	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	15.2	Thalassemia's	B1,B2, C1, C2	Face to Face	Moodle	Synchronous	Exams and quizzes	Rodak's Hematology, 6 th Ed.
	15.3	Special Stains	A2, B1, B2	Face to Face		Synchronous	Exams and quizzes	

22 Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
Assignments					
Quizzes					
Lab Reports	30		A2, B1, B2		On Campus
First Exam					
Second Exam or (Mid Exam)	30		A1,A2, B1	Week 8	On Campus
Final Exam	40	All material	All SLOs		On Campus

23 Course Requirements

- **Students should have a computer, internet connection, account on Moodle**

Development of ILOs is promoted through the following teaching and learning methods

1. Power point lectures
2. Videos
3. Journal articles
4. Clinical Cases
5. E-learning (Moodle)

24 Course Policies:

A- Attendance policies: Attendance of lectures and lab sessions is obligatory. Attendance will be taken each class.

B- Absences from exams and submitting assignments on time: Not accepted.

A student who has been absent for 15% or more of the total hours of any course, including absences for medical or compassionate reasons, may be required to withdraw from that particular course.

Students who miss quizzes or examinations will automatically be assigned a mark of zero unless the respective instructor, or the Program Head, has been notified of the reason for absence *PRIOR* to the commencement of the exam. Acceptable reasons will be evaluated at the time (e.g., illness - medical certificate may be required, serious illness or death in the family, etc.). Supplemental examinations may be allowed in legitimate cases.

C- Health and safety procedures:

All students need to be immunized against hepatitis B, immunization certificate must be forwarded to the coordinator of the hospital training. Pregnancy affects immunization and it is the responsibility of the student to notify the health person as soon as possible of her pregnancy. If there are fees related to immunization, it is the responsibility of the student.

D- Honesty policy regarding cheating, plagiarism, and misbehavior: Very strong.

E- Grading policy: 70% theory, 30% practical

F- Available university services that support achievement in the course:

- The University Computer Lab.
- The University Main Library.
- The University e-library.

25 References:

A- Required book(s), assigned reading and audio-visuals:

1. Rodak's Hematology- Clinical principles and applications, 6th Ed.

2. Essential Hematology, 6th Ed., Hoffbrand

B- Recommended books, materials, and media:

26 Additional information:

Name of Course Coordinator: **Dr. Zaid Aburubaiha**

Signature: *Aburubaiha Zaid* Date: 1/2024

Head of Curriculum Committee/Department: **Dr. Suzan Matar**

Signature: *Suzan Matar*

Head of Department: **Dr. Ahmed Abu siniyeh**

Signature: *Ahmed Abu siniyeh*

Head of Curriculum Committee/Faculty: **Dr. Mu'ayyad Al Hseinat** Signature: *Mu'ayyad Al Hseinat*

Dean: **Prof. Mahmoud Jaghoub**

Signature: *Mahmoud Jaghoub*