

American University of Beirut
Faculty of Health Sciences
Medical Laboratory Sciences Program

MLSP 201
(Clinical Hematology I)
Fall Semester 2023-2024

Name	Rolla Al-Khatib	Course Credits:	3 credits
Office Hours:	TWRF: 10:00 a.m.-12:00 p.m. or by appointment	Meeting Location	Van Dyck Hall AUDT
Office Location:	Van Dyck, Rm 321	Meeting Time:	TR: 02:00 p.m. – 03:15 p.m.
Extension	4696		
E-mail	ra03@aub.edu.lb		

COURSE DESCRIPTION

MLSP 201 is intended to introduce students to fundamental concepts in hematology including normal physiology of blood, development of blood cell elements in the erythrocytic, leukocytic and megakaryocytic cell lines as well as blood cell disorders, with a special emphasis on anemias. The course covers the different causes of anemias and prepares students to the diagnosis of the different types of anemia based on laboratory findings. It is based on lectures, discussions, demonstrations and case studies.

COURSE LEARNING OBJECTIVES (LOs):

By the end of the course, students will be able to:

- 1- Describe the various elements of the blood;
- 2- Explain the various laboratory tests performed in Hematology;
- 3- Describe the morphology and function of the different types of blood cells;
- 4- Describe the B.M structure and function;
- 5- Describe and explain the formation of blood cells in the B.M;
- 6- Diagnose the different types of anemia based on laboratory findings;
- 7- Describe the intrinsic and extrinsic pathways of coagulation;
- 8- Describe the different types of diseases associated with abnormal clotting.

REFERENCES

- * **Moodle Course**
- * *Clinical Laboratory Hematology*
by Shirlyn B. McKenzie Ph.D. CLS (NCA) (Author), Lynne Williams (Author)
- * **Interesting Hematology Links**
www.hematologyatlas.com

STUDENT ASSESSMENT

Grades for this course will be based on the following criteria:

Quiz I	30 %	Meets learning objectives 1, 2, 3
Quiz II	30 %	Meets learning objectives 4, 5
Final exam	40 %	Meets learning objectives 6, 7, 8

N.B.: The passing grade for the course is 60

COURSE SYLLABUS

Week	Topic	Reading	Lecturer
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WEEK 1

T AUG 29	<ul style="list-style-type: none"> * Introduction to Hematology * Composition of blood (RBC(s), WBC(s) and platelets). 	Moodle (lecture)	Khatib
	<ul style="list-style-type: none"> * Anticoagulants * Sources of blood for hematological tests * Manual blood film preparation * Staining of the blood film 	Moodle (lecture)	Khatib

R AUG 31	<ul style="list-style-type: none"> * Tools used to study blood cells * CBC count <ul style="list-style-type: none"> • WBC count • RBC count • Hemoglobin (Spectrophotometric determination of Hb concentration) • Hematocrit (Centrifuged Hct) 	Moodle (lecture)	Khatib
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WEEK 2

T SEP 5	<ul style="list-style-type: none"> • Red blood cell indices (MCV, MCH, MCHC, RDW) 	Moodle (lecture)	Khatib
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R SEP 7	<ul style="list-style-type: none"> * Techniques for cell counting <li style="padding-left: 20px;">Automated cell counting <li style="padding-left: 20px;">Manual cell counting 	Moodle (lecture)	Khatib
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	<ul style="list-style-type: none"> * Erythrocyte Sedimentation Rate 	Moodle (lecture)	Khatib
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WEEK 3

T SEP 12	* Blood film inspection	Moodle (Lecture)	Khatib
	* Alterations of red blood cells	Moodle (Lecture) Hematology atlas.com and Moodle (Power Point Presentation)	Khatib
R SEP 14	* Abnormal red blood cell inclusions	Moodle (Lecture) Hematology atlas.com and Moodle (Power Point Presentation)	Khatib

WEEK 4

T SEP 19	*Erythrocyte, production, maturation and destruction *Reticulocyte count	Moodle (Lecture)	Khatib
R SEP 21	* Structure of hemoglobin * Normal hemoglobin variants * Hemoglobin synthesis and function	Moodle (Lecture)	Khatib

WEEK 5

T SEP 26	* Red blood cell membrane composition and structure.	Moodle (Lecture)	Khatib
WRSEP 28	* Classification of white blood cells * Differential count * Corrected WBC count	Moodle (Lecture & Power Point Presentation)	Khatib
	* Neutrophils * Eosinophils * Basophils	*Moodle (Lecture & Power Point *Online Hematology atlas)	Khatib

WEEK 6

T OCT 3	* Monocytes * Lymphocytes	*Moodle (Lecture & Power Point *Online Hematology atlas)	Khatib
R OCT 5	* Stem Cells * Erythropoiesis	Moodle (Lecture & Power Point Presentation)	Khatib

Lab	*Normal Differential (Group I)		
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W E E K 7

T OCT 10	* Myelopoiesis * Thrombopoiesis	Moodle (Lecture & Power Point Presentation)	Khatib
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T OCT 12	* Organs involved in blood cell formation * B.M structure and function	Moodle (Lecture)	Khatib
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Lab	* Normal Differential (Group II)		
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W E E K 8

T OCT 17	* Quiz I		
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R OCT 19	* Other elements of the bone marrow	Moodle (Lecture)	Khatib
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Lab	*Normal Differential (Group III)		
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W E E K 9

T OCT 24	* Introduction to Anemias * Iron deficiency anemia	Moodle (Lecture)	Khatib
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R OCT 26	* Anemia of Chronic Diseases * Sideroblastic Anemias	Moodle (Lecture)	Khatib
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Lab	*Normal Differential (Group IV)		
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W E E K 10

T OCT 31	* β thalassemia	Moodle (Lecture)	Khatib
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R NOV 2	* α thalassemia * $\delta\beta$ thalassemia * HPFH	Moodle (Lecture)	Khatib
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Lab	* Abnormal Differential (Group I)		
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WEEK 11

T NOV 7	* Sickle Cell Anemia	Moodle (Lecture)	Khatib
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R NOV 9	* Structural Hemoglobinopathies	Moodle (Lecture)	Khatib
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Lab	* Abnormal Differential (Group II)		
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WEEK 12

T NOV 14	* Quiz II	Moodle (Lecture)	
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R NOV 16	* Double Heterozygous conditions	Moodle (Lecture)	Khatib
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Lab	* Abnormal Differential (Group II)		
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WEEK 13

T NOV 21	* Megaloblastic anemia	Moodle (Lecture)	Khatib
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R NOV 23	* Hemolytic Anemias	Moodle (Lecture)	Khatib
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Lab	* Abnormal Differential (Group III)		
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WEEK 14

T NOV 28	* Coagulation I	Moodle (Lecture)	Dr.Mahfouz
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R NOV 30	* Coagulation II	Moodle (Lecture)	Dr.Mahfouz
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Lab	* Abnormal Differential (Group IV)		
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COURSE POLICY

1. **Attendance:** You are expected to attend all classes and participate in class activities. If you miss a class, it is your responsibility to make up for the material missed, and inquire about any announcements made. If you miss more than one fifth of class sessions, you are subject to withdrawing from the course with a-w-grade. *Please refer to the AUB catalogue.*

2. **Exams:** Examinations must be taken as scheduled. Make up exams will not be given unless a valid excuse is given. Only authorized medical reports will be accepted. (AUBMC/ Infirmary).
3. **Withdrawal date:** Please observe withdrawal dates set by the Registrar's Office.
4. **E-mail communication:** I will be e-mailing you on regular basis throughout the semester. You are required to check your e-mails regularly.
5. **Moodle:** The course material and assignments are posted on Moodle. Students are held accountable for checking the Moodle course on regular basis.
6. **Academic integrity:** Education is demanding and you need to properly manage your time. Do not hesitate to use the resources around you but do not cut corners. Cheating and plagiarism will not be tolerated. Review the Student Code of Conduct and familiarize yourself with definitions and penalties. Cheating might earn you a failing mark on the assignment, at the very least. You might fail the course in which you cheated, be warned, suspended or expelled from University and a permanent mention of the disciplinary action might be made in your student records. If you're in doubt about what constitutes plagiarism, ask your instructor because it is *your* responsibility to know. Remember that the American University of Beirut has a strict anti-cheating and anti-plagiarism policy. Do not become a lesson to others. For further information, kindly visit AUB's Policies and Procedures or <http://pnp.aub.edu.lb/general/conductcode>.
7. **Students with Disabilities:** If you have a disability, for which you may request accommodation in AUB classes, consult the website for more information and make arrangements with the Coordinator (http://www.aub.edu.lb/sao/Pages/Students_20with_20Special_20Needs.aspx). Also, please see the instructor of this course privately in regard to possible support services that can be provided to you.
8. **Non-Discrimination – Title IX – AUB:**
AUB is committed to facilitating a campus free of all forms of discrimination including sex/gender-based harassment prohibited by Title IX. The University's non-discrimination policy applies to, and protects, all students, faculty, and staff. If you think you have experienced discrimination or harassment, including sexual misconduct, we encourage you to tell someone promptly. If you speak to a faculty or staff member about an issue such as harassment, sexual violence, or discrimination, the information will be kept as private as possible, however, faculty and designated staff are required to bring it to the attention of the University's Title IX Coordinator. Faculty can refer you to fully confidential resources, and you can find information and contacts at www.aub.edu.lb/titleix. **To report an incident**, contact the University's Title IX Coordinator Ms. Mitra Tauk at 01-350000 ext. 2514, or titleix@aub.edu.lb. An anonymous report may be submitted online via Ethics Point at www.aub.ethicspoint.com.