

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

**MLSP 201**  
*(Clinical Hematology I)*  
*Fall Semester 2019-2020*

<b>Name</b>	Rolla Al-Khatib	<b>Course Credits:</b>	3 credits
<b>Office Hours:</b>	TWRF: 10:00 a.m.-11:00 a.m. <b>or by appointment</b>	<b>Meeting Location</b>	Van Dyck, Nabil Boustani
<b>Office Location:</b>	Van Dyck, Rm 2013C	<b>Meeting Time:</b>	MW: 02:00 p.m. – 03:15 p.m.
<b>Extension</b>	4696		
<b>E-mail</b>	<a href="mailto:ra03@aub.edu.lb">ra03@aub.edu.lb</a>		

### **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.

### **STUDENTS LEARNING OUTCOMES**

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

- Describe the various elements of the blood;
- Explain the function of each type of blood cell;
- Describe the different types of blood cells in the bone marrow;
- Describe the formation and development of the different types of blood cells in the bone marrow;
- Classify the different types of anemia;
- Diagnose the different types of anemia based on laboratory findings;
- 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](http://www.hematologyatlas.com)

<b>STUDENT ASSESSMENT</b>
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**Grades for this course will be based on the following criteria:**

Quiz I	30 %
Quiz II	30 %
Final exam	35 %
Evaluation	5%

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

<b>COURSE SYLLABUS</b>
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Week	Topic	Activities	Reading
<b>WEEK 1</b>			
M SEP 2	<ul style="list-style-type: none"> <li>* Introduction to Hematology</li> <li>* Composition of blood (RBC(s), WBC(s) and platelets).</li> </ul>		Moodle (lecture)
	<ul style="list-style-type: none"> <li>* Anticoagulants</li> <li>* Sources of blood for hematological tests</li> <li>* Manual blood film preparation</li> <li>* Staining of the blood film</li> </ul>		Moodle (lecture)
W SEP 4	<ul style="list-style-type: none"> <li>* Tools used to study blood cells</li> <li>* CBC count                             <ul style="list-style-type: none"> <li>• WBC count</li> <li>• RBC count</li> </ul> </li> </ul>		Moodle (Lecture)
	<ul style="list-style-type: none"> <li>• Hemoglobin (Spectrophotometric determination of Hb concentration)</li> <li>• Hematocrit (Centrifuged Hct)</li> </ul>		Moodle (Lecture & Table)
<b>WEEK 2</b>			
M SEP 9	<ul style="list-style-type: none"> <li>• Red blood cell indices (MCV, MCH, MCHC, RDW)</li> <li>•</li> </ul>		Moodle (Lecture & Table)
W SEP 11	* Techniques for cell counting		Moodle (Lecture)
	* Erythrocyte Sedimentation Rate		Moodle (Lecture)
<b>WEEK 3</b>			

M SEP 16	* Erythrocyte, production, maturation and destruction		Moodle (Lecture)
	* Reticulocyte count		Moodle (Lecture)

W SEP 18	* Structure of hemoglobin * Normal hemoglobin variants * Hemoglobin synthesis and function		Moodle (lecture)
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**WEEK 4**

M SEP 23	* Alterations of the red blood cells		Hematology atlas.com and Moodle (Power Point Presentation)
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W SEP 25	* Abnormal red blood cell inclusions		Hematology atlas.com and Moodle (Power Point Presentation)
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**WEEK 5**

M SEP 30	* Structure of the red blood cell and red blood cell membrane		Moodle
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W OCT 2	* Classification of white blood cells * Differential count		Moodle (Lecture & Power Point)
	* Corrected WBC count		

**WEEK 6**

M OCT 7	* Neutrophils * Eosinophils * Basophils		Moodle (Lecture & Power Point Presentation)
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W OCT 9	* Monocytes * Lymphocytes		Moodle (Lecture & Power Point Presentation)
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**WEEK 7**

M OCT 14	* Erythropoiesis		Moodle (Lecture & Power Point Presentation)
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W OCT 16	* Myelopoiesis		Moodle (Lecture & Power Point Presentation)
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**WEEK 9**

M OCT 21	* Thrombopoiesis		Moodle (Lecture & Power Point Presentation)
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W OCT 23	* Organs involved in blood cell formation		Moodle (Lecture)
	* Stem Cells		Moodle (Lecture & Power Point Presentation)

**WEEK 10**

M OCT 28	* Other elements of the bone marrow		Moodle (Lecture & Power Point Presentation)
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W OCT 30	* Other elements of the bone marrow		Moodle (Lecture & Power Point Presentation)
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**WEEK 11**

M NOV 4	* <b>Quiz I</b>		
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W NOV 6	* Introduction to Anemias		Moodle (Lecture )
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**WEEK 12**

M NOV 11	* Iron deficiency anemia (Introduction)		Moodle (Lecture )
	* Iron deficiency anemia (Diagnosis)		Moodle (Lecture )

W NOV 13	* $\beta$ thalassemia (Introduction)		Moodle (Lecture )
	* $\beta$ thalassemia (Diagnosis)		Moodle (Lecture )

**WEEK 13**

M NOV 18	* Sickle cell anemia		Moodle (Lecture )
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W NOV 20	* Vit. B12 and Folate metabolism		Moodle (Lecture)
	* Megaloblastic anemia		Moodle (Lecture)

**WEEK 14**

M NOV 25	* Coagulation I		Moodle (Lecture)
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W NOV 27	* Coagulation II		Moodle (Lecture)
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**WEEK 15**

M DEC 2	* <b>Quiz II</b>		Moodle (Lecture )
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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:** Cheating and plagiarism will not be tolerated. Review the Student Code of Conduct in your handbook and familiarize yourself with definitions and penalties. If you're in doubt about what constitutes plagiarism, ask your instructor because it is *your* responsibility to know. The American University of Beirut has a strict anti-cheating policy. Penalties include failing marks on the assignment in question, suspension or expulsion from University and a permanent mention of the disciplinary action in the student's records.
7. **Special needs:** 'AUB strives to make learning experiences as accessible as possible. If you anticipate or experience academic barriers due to a disability (including mental health, chronic or temporary medical conditions), please inform me immediately so that we can privately discuss options. In order to help establish reasonable accommodations and facilitate a smooth accommodations process, you are encouraged to contact the Accessible Education Office: [accessibility@aub.edu.lb](mailto:accessibility@aub.edu.lb); +961-1-350000, x3246; West Hall, 314'.
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](http://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](mailto:titleix@aub.edu.lb). An anonymous report may be submitted online via EthicsPoint at [www.aub.ethicspoint.com](http://www.aub.ethicspoint.com).