

توصيف مساق . Practical Training in Hematology and Immunology

تدريب ميداني في علم الدم والمناعة والامصال (0406480)

1. معلومات مدرس المساق (Instructor)

اسم (مدرس / منسق) المساق :	Dr. Amal Hisham Uzrail
الساعات المكتبيــــــــــــــــة :	د أمل هشام عزريل حد - ثل 12 - 1
رقم المكتب والرقم الفرعي :	
البريد الالكتروني :	amaluzrail@aabu.edu.jo
مساعد البحث والتدريس/المشرف/القي (إن وجد):	

2. وصف المساق (Course Description)

The student trains (18) practical hours per week distributed over two days throughout the first semester of the fourth academic year in the medical analysis laboratories approved by Al al-Bayt University for this purpose. The training includes the following basic areas of medical analysis: Hematology and Immunology. The training score is monitored, and the training is followed up by a supervisor appointed for this purpose.

3. بيانات المساق (Course Title)

رقم المساق: 406480	اسم المساق: تدريب ميداني في علم الدم والمناعة والامصال	المستوى: الرابع
طبيعة المساق: تدريب	المتطلب السابق 0406251	وقت المحاضرة: 8 - 14
العام الجامعي: 2021 / 2020	الفصل الدراسي: الاول	عدد الساعات الدراسية: 3

4. أهداف المساق (Course Objectives)

To learn how to apply theoretical and applied skills at hospitals' clinical laboratories (Hematology and Immunology) using clinical samples	أ-
To develop interpersonal skills and to work as part of the health-care team	ب-
To learn how to obtain samples, process samples, analyze samples, and report results	ج-
To develop analytical and diagnostic skills in performing laboratory tests and interpretation of test results	د-
To develop troubleshooting skills and to identify issues relating to performance of laboratory techniques and equipment	ر
To develop skills in application of Quality Assurance and Quality control	ز
To learn how to properly apply safety precautions, utilize personal-protective equipment, and manage laboratory accidents or emergencies	س

5. مخرجات التعلم (Intended Student Learning Outcomes) (المعرفة والمهارات والكفايات)

يفترض بالطالب بعد دراسته لهذا المساق أن يكون قادرا على:

For each of the Hematology and Immunology laboratories, the student should understand and be fully aware of the following aspects:

1. The principle of the test including manual and/or automated techniques.
2. The application of the test and its correlation with the diagnosis of related disorders and abnormalities (i.e., why the test is performed).
3. The sample required to perform the test; including any precautions regarding the type of sample, the time of collection, handling, processing, transport, and preservation. Furthermore, patient education (if needed) is a critical part of certain assays.
4. Procedures (how to perform the test): the student should show a level of proficiency in performing the test according to the procedure manual.
5. Interferences and sources of errors should be known and avoided to prevent false positive/negative/elevated/reduced results.
6. Quality control and quality assurance measures are crucial in maintaining the required level of accuracy and precision. Students should be aware of these measures and apply them successfully
7. Results interpretation: The student should be familiar with the normal values of the test and take into consideration any age, gender, or ethnic variation of these values. Furthermore, the student should be able to interpret results and correlate them with known disorders and abnormalities.
8. Student should learn the system of results reporting, in accordance to the policy of the affiliated laboratory.

9. Safety measures should be well understood and applied with the highest level of precaution and care. This ensures not only student safety, but also the safety of colleagues, samples, and patients.

6. محتوى المساق (Course Content)

This course is designed as training practical where students work at a hospital or health facility for one semester and are required to train on all aspects of Hematology and Immunology.

7. استراتيجيات التعليم والتعلم وطرق التقويم

(Teaching and learning Strategies and Evaluation Methods)

ت	مخرجات التعلم	استراتيجيات التدريس	أنشطة التعلم	نوع التقويم/القياس (امتحان/عروض صفية/مناقشة/واجبات)
1	To learn how to apply theoretical and applied skills at hospitals' clinical laboratories (Hematology and Immunology) using clinical samples	Brain storming, discussion, Case studies	Training	Continuous assessment
2	To develop interpersonal skills and to work as part of the health-care team	Brain storming, discussion, Case studies	Training	Continuous assessment
3	To learn how to obtain samples, process samples, analyze samples, and report results	Brain storming, discussion, Case studies	Training	Continuous assessment
4	To develop analytical and diagnostic skills in performing laboratory tests and interpretation of test results	Group discussion brain storming, Case studies	Training	Continuous assessment
5	To develop troubleshooting skills and to identify issues relating to performance of laboratory techniques and equipment	Group discussion, brain storming, Case studies	Training	Continuous assessment
6	To develop skills in application of Quality Assurance and Quality control	Group discussion, brain storming, Case studies	Training	Continuous assessment
7	To learn how to properly apply safety precautions, utilize personal-protective	Group discussion, brain storming, Case studies	Training	Continuous assessment

			equipment, and manage laboratory accidents or emergencies	
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Training Content

Immunology laboratory	
	Topics
1	Agglutination: -Widal test -Brucella (Rose Bengal) test
2	-C-Reactive Protein (CRP)
3	-Rhematoid Factor (RF)
4	-Anti-Streptolysin O (ASO)
5	-Monospot test
6	VDRL/RPR (Syphilis testing)
7	ELISA: Principle and applications e.g. HIV, HBsAg, HCV, Toxoplasma, Rubella, CMV
8	Immunofluorescence: Principle and Applications:-ANA-Anti-DNA
9	Precipitation: -Quantification of Immunoglobulins and complement components by Radial Immunodiffusion (RIA)

Hematology laboratory	
	Topics
1	Understand the phlebotomy procedures and be familiar with the technical errors that may affect the laboratory results.
2	Be familiar with the pre-analytical procedures that are required for the samples including patient education and preparation as well as sample collection, transportation and processing.
3	Understand the complete blood count (CBC) analysis, including: A. Be aware of the manual techniques for the determination CBC parameters: <input type="checkbox"/> Absolute and relative blood cells count. <input type="checkbox"/> Measured and calculated red cell indices: Hb, Hct, MCV, MCH, MCHC and RDW. <input type="checkbox"/> Differential count of WBC's <input type="checkbox"/> Platelets count and PDW <input type="checkbox"/> Memorize the normal values of all CBC parameters. B. Understand the principle of automation in CBC analysis and be familiar with their quality control and quality assurance protocols. C. Be familiar with the technical considerations and testing precautions for each of these assays D. Be able to explain the CBC report in details and being highly capable to correlate these results with the blood film examination

4	<p>Be able to interpret blood film exam</p> <p>A. Define and be familiar with the normal morphologies of erythrocyte, leukocytes and thrombocytes.</p> <p>B. Define all morphological abnormalities of erythrocytes, leukocytes and thrombocytes.</p> <p>C. Identify the presence of any immature precursors and progenitors of blood cells and correlate their presence to related blood disorders.</p> <p>D. Following to "C" you should be able to define the morphology of these precursors (when possible)</p> <p>E. Define the cytochemical and immunological markers for the differentiation of these precursors/progenitors. (understand the staining procedures and results interpretations)</p> <p><input type="checkbox"/> Cytochemical stains: Myeloperoxidase, Sudan Black-B, Specific and non-specific esterases, LAP scoring, Acid phosphatase and periodic-acid-Schiff (PAS)</p> <p><input type="checkbox"/> The most common immunological CD markers that are specific for these Precursors</p>
5	<p>Understand the specialized tests for the diagnosis of hematological disorders:</p> <p>A. Iron studies: Free iron, TIBC, transferrin saturation, serum ferritin and serum transferrin receptors.</p> <p>B. Acid and alkaline hemoglobin electrophoresis</p> <p>C. Sickling test</p> <p>D. Osmotic fragility test</p> <p>E. Coomb's test</p>
6	The ability to correlate a laboratory finding with its corresponding hematological disorder
7	Laboratory management is a crucial part of student's training, therefore the student should be aware of lab organization, communication strategies, and other managerial issues
8	Quality control and quality assurance policies are an integral part of the laboratory work.

8. تقييم الطلبة (Assessment)

توزيع الدرجات لكل أسلوب	توقيت التقييم	الأساليب المستخدمة
40	خلال الفصل	1-أعمال الفصل: (تقرير، وظائف، حضور، تقييم جهة التدريب)
60	أسبوع الامتحانات النهائية	2-امتحان تحريري نهائي

9. الكتاب المقرر (Text Book)

Clinical Hematology: Theory & Procedures	المرجع الرئيس
Turgeon, Mary Louise	المؤلف
Baltimore: Lipincott Williams & Wilkins	الناشر
2017	السنة
6th ed.	الطبعة
ISBN 9781496332288	الموقع الالكتروني للمرجع

Immunology and Serology in Laboratory Medicine	المرجع الرئيس
Mary Louise Turgeon	المؤلف
Mosby	الناشر
2014	السنة
5 th ed	الطبعة
ISBN: 9780323085175	الموقع الالكتروني للمرجع

10. المراجع الإضافية (References) (وتشمل الكتب والبحوث المنشورة في الدوريات او المواقع الالكترونية)

Harmening, Denise and Finnegan, Kathleen (2014). Heme Notes: A Pocket Atlas of Cell Morphology. Philadelphia: F.A. Davis. ISBN 9780803619029	-1
Clinical Immunology and Serology: A Laboratory Perspective, 3rd Edition by Stevens	-2