COURSE DESCRIPTIONS

Faculty	Pharmacy				
Department	Medical laboratory sciences			**NQF level**	7
Course Title	Hospital Laboratory Training in Hematology & Histopathology	**Code**	902491	**Prerequisite**	100 credit hours
Credit Hours	3	**Theory**		**Practical**	
Course Leader	Sokiyna Ababneh, M.Sc	**email**	s.ababneh@jadara.edu.jo		
Lecturers	Sokiyna Ababneh, M.Sc	**emails**	s.ababneh@jadara.edu.jo		
Lecture time		**Classroom**			
Semester	First_2021-2022	**Production**	2019	**Updated**	2020
Awards				**Attendance**	Fulltime

Short Description

A one semester long clinical laboratory practice in affiliated hospital laboratories, under supervision, in Hematology laboratories and histopathology laboratories.
Field training give the student the opportunity to receive actual experience process to deal with sampling and analysis, as well as report writing. The field training is usually taken place in the medical laboratories in hospitals and in the following sessions: Hematology and, histology. This training is under the control and supervision of field training supervisors from the department and hospitals.

Course Objectives

1. To learn how to apply theoretical and applied skills at hospitals' various clinical laboratories using clinical samples.
2. To develope interpersonal skills and to work as part of the health-care team.
3. To learn how to obtain samples, process samples, analyze samples, and report results
4. To develop analytical and diagnostic skills in performing laboratory tests and interpretation of test results.
5. To develop troubleshooting skills and to identify issues relating to performce of laboratory techniques and equipment
6. To develop skills in application of Quality Assurance and Quality control.
7. To learn how to properly apply safety precations, utilize personel-protective equipment, and manage laboratory accedents or emergincies

Learning Outcomes

A. Knowledge - Theoretical Understanding

a1. outline the principle of the test including manual and/or automated techniques.

B. Knowledge - Practical Application

a2. Apply a level of proficiency in performing the test according to the procedure manual

C. Skills - Generic Problem Solving and Analytical Skills

b1. Analyze Interferences and sources of errors for preventing false positive/negative/elevated/reduced results.

b2. Analyze Quality control and quality assurance measures for maintaining the required level of accuracy and precision.
b3. function safety measures with the highest level of precaution and care.

D. Skills - Communication, ICT, and Numeracy

b4. prove the ability to communicate information and arguments effectively using written and oral skills for example , patient education (if needed) is a critical part of certain assays.
b5. Prove the ability to develop interpersonal skills and to work as part of the health-care team.

E. Competence: Autonomy, Responsibility, and Context

c1. adapt the knowledge gained through field training in application of the test and its correlation with the diagnosis of related disorders and abnormalities
c2. adapt the knowledge gained through field training to be fully aware of the sample required to perform the test; including any precautions regarding the type of sample, the time of collection, handling, processing, transport, and preservation.
c3. adapt the knowledge gained through field training in learning the system of results reporting, in accordance to the policy of the affiliated laboratory.

Teaching and Learning Methods

- Hands on procedures
- Observation
- Brainstorming
- Case studies
- Problems solving

Assessment Methods

- **Oral exam 20%**
- **Hospital evaluation 20%**
- **Hospital training Attendance 10%**
- **Final exam 50%**

Course Contents					
Week	**Hours**	**CLOs**	**Topics**	**Teaching & Learning Methods**	**Assessment Methods**
1.	3	a1,a2, b1,b2, b3,b5 b4,c1, c2,c3	Understand the phlebotomy procedures and be familiar with the technical errors that may affect the laboratory results	• Hands on procedures • Observation • Brainstorming • Case studies • Problems solving	**Hospital training attendance.** **Hospital evaluation.** **Training reports.** **Training final exam.**
2.	3	a1,a2, b1,b2, b3, b4, c1,c2, b5,c3	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	• Hands on procedures • Observation • Brainstorming • Case studies • Problems solving	**Hospital training attendance.** **Hospital evaluation.** **Training reports.** **Training final exam.**
3.	3	a1,a2, b1,b2, b3,b4, c1,c2, b5,c3	Understand the complete blood count (CBC) analysis, including: A. Be aware of the manual techniques for the determination CBC parameters: • Absolute and relative blood cells count. • Measured and calculated red cell indices: Hb, Hct, MCV, MCH, MCHC and RDW. • Differential count of WBC's • Platelets count and PDW • Memorize the normal values of all CBC parameters B. Be familiar with the technical considerations and testing precautions for each of these assays	• Hands on procedures • Observation • Brainstorming • Case studies • Problems solving	**Hospital training attendance.** **Hospital evaluation.** **Training reports.** **Training final exam.**
4.		a1,a2, b1,b2, b3,b4, c1,c2, c3	Understand the complete blood count (CBC) analysis, including: C. Understand the principle of automation in CBC analysis and be familiar with their quality control and quality assurance protocols. D. Be able to explain the CBC	• Hands on procedures • Observation • Brainstorming • Case studies • Problems solving	**Hospital training attendance.** **Hospital evaluation.**

			report in details and being highly capable to correlate these results with the blood film examination		**Training reports. Training final exam.**
5.	3	a1,a2, b1,b2, b3,b4, c1,c3	Be able to interpret blood film exam: A. Define and be familiar with the normal morphologies of erythrocyte, leukocytes and thrombocytes. B. Define all morphological abnormalities of erythrocytes, leukocytes and thrombocytes C. Identify the presence of any immature precursors and progenitors of blood cells and correlate their presence to related blood disorders.	• Hands on procedures • Observation • Brainstorming • Case studies • Problems solving	**Hospital training attendance.** **Hospital evaluation.** **Training reports. Training final exam.**
6.		a1,a2, b1,b2, b3,b4, c1,c2, b5,c3	Be able to interpret blood film exam: D. Following to "C" you should be able to define the morphology of these precursors (when possible) E. Define the cytochemical and immunological markers for the differentiation of these precursors/progenitors. (understand the staining procedures and results interpretations) • Cytochemical stains: Myeloperoxidase, Sudan Black-B, Specific and non-specific esterases, LAP scoring, Acid phosphatase and periodic-acid-Schiff (PAS) • The most common immunological CD markers that are specific for these precursors	• Hands on procedures • Observation • Brainstorming • Case studies • Problems solving	**Hospital training attendance.** **Hospital evaluation.** **Training reports. Training final exam.**
7.	3	a1,a2, b1,b2, b3,b4, c1,c2, b5,c3	Understand the specialized tests for the diagnosis of hematological disorders: A. Iron studies: Free iron, TIBC, transferring saturation, serum ferritin and serum transferrin receptors. B. Acid and alkaline hemoglobin electrophoresis C. Sickling test D. Osmotic fragility test E. Coomb's test	• Hands on procedures • Observation • Brainstorming • Case studies • Problems solving	**Hospital training attendance.** **Hospital evaluation.** **Training reports. Training final exam.**

8.	3	a1,a2, b1,b2, b3,b4, c1,c2, b5,c3	The ability corresponding hematological disorder to correlate a laboratory finding	• Hands on procedures • Observation • Brainstorming • Case studies • Problems solving	**Hospital training attendance.** **Hospital evaluation.** **Training reports.** **Training final exam.**
9.	3	a1,a2, b1,b2, b3,b4, c1,c2, c3	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	• Hands on procedures • Observation • Brainstorming • Case studies • Problems solving	**Hospital training attendance.** **Hospital evaluation.** **Training reports.** **Training final exam.**
10.	3	a1,a2, b1,b2, b3,b4 c1,c2, c3	Quality control and quality assurance policies are an integral part of the laboratory work. Therefore, a high level of knowledge is expected from the student in this regard.	• Hands on procedures • Observation • Brainstorming • Case studies • Problems solving	**Hospital training attendance.** **Hospital evaluation.** **Training reports.** **Training final exam.**
11.	3	a1,a2, b1,b2, b3,b4, c1,c2	Tissue preparation: fixation , dehydration	• Hands on procedures • Observation • Brainstorming • Case studies • Problems solving	**Hospital training attendance.** **Hospital evaluation.** **Training reports.** **Training final exam.**
12.	3	a1,a2, b1,b2, b3,b4, c1,c2	Tissue preparation: Clearing and infiltration	• Hands on procedures • Observation • Brainstorming • Case studies	**Hospital training attendance.** **Hospital evaluation.**

				• Problems solving	**Training reports. Training final exam.**
13.	3	a1,a2, b1,b2, b3,b4, c1,c2, b5	Tissue preparation: Embedding and sectioning	• Hands on procedures • Observation • Brainstorming • Case studies • Problems solving	**Hospital training attendance.** **Hospital evaluation.** **Training reports. Training final exam.**
14.	3	a1,a2, b1,b2, b3,b4, c1,c2, b5,c3	Tissue preparation: Staining and special stains	• Hands on procedures • Observation • Brainstorming • Case studies • Problems solving	**Hospital training attendance.** **Hospital evaluation.** **Training reports. Training final exam.**
15.	3	a1,a2, b1,b2, b3,b4 c1,c2, b5,c3	Immunohistochemical studies – tumor marker and advantage, drawback and procedure steps.	• Hands on procedures • Observation • Brainstorming • Case studies • Problems solving	**Hospital training attendance.** **Hospital evaluation.** **Training reports. Training final exam.**
16.	3	a1,a2, b1,b2, b3,b4 c1,c2, b5,c3	• Revision • **Oral exam** • **Final exam**		

Infrastructure	
Textbook	Any updated textbooks covering the training material
References	Handouts, Hospital Lab Manuals, Kit sheets.
Required reading	
Electronic materials	
Other	University library, Internet, expert people, trainees (assigned by the department)

Course Assessment Plan												
Assessment Method		**Grade**	**CLOs**									
			a1	**a2**	**b1**	**b2**	**b3**	**b4**	**b5**	**c1**	**c2**	**c3**
First (Midterm)												
Second (if applicable)												
Final Exam		50%	13		4					18	10	5
Coursework												
Coursework assessment methods	Assignments											
	Case study											
	Discussion and interaction	20%					2	5	3	5	5	
	Hospital evaluation	20%		5	2					2	1	10
	Lab tests and assignments, attendance	10%			3	7						
	Presentations											
	Quizzes											
Total		100%	13	5	9	7	2	5	3	25	16	15

Plagiarism
Plagiarism is claiming that someone else's work is your own. The department has a strict policy regarding plagiarism and, if plagiarism is indeed discovered, this policy will be applied. Note that punishments apply also to anyone assisting another to commit plagiarism (for example by knowingly allowing someone to copy your code). Plagiarism is different from group work in which a number of individuals share ideas on how to carry out the coursework. You are strongly encouraged to work in small groups, and you will certainly not be penalized for doing so. This means that you may work together on the program. What is important is that you have a full understanding of all aspects of the completed program. In order to allow proper assessment that this is indeed the case, you must adhere strictly to the

course work requirements as outlined above and detailed in the coursework problem description. These requirements are in place to encourage individual understanding, facilitate individual assessment, and deter plagiarism.