Jordan University of Science and Technology
Faculty of Applied Medical Sciences
Department of Medical Laboratory Sciences
Course Syllabus

Course Information	
Course Title	Practical training Hematology and Blood Banking
Course Code	LM482
Prerequisites	Diagnostic hematology (LM357) and Diagnostic Hematology and Blood Banking (M358)
Instructor	Dr. Mohammad A. Audeh
Office Location	Dept. of Medical Laboratory Sciences (M5 level -4)
Office Phone Number	02 721-1000
Office Hours	● TBA **or** by appointment (please send an e-mail to the address below)
E-mail	*mabaniahmad@just.edu.jo*
Co. instructor	N.A.

Course Description

This is an intensive training session that aims to broaden and strengthen the educational knowledge of students in the fields of diagnostic hematology and blood banking as well as to provide the students with the practical skills of working under realistic environment in the laboratories of accredited medical institutes. Training is scheduled to expose the students to work on a hematology and blood banking laboratories during the daily working days of that medical institute. All students will be required to comply to the regulations and rules set by the medical institute.

Recommended Textbook	
Title	Hematology: Clinical principles and applications
Author(s)	Bernadette F. Rodak, George A. Fritsma and Kathryn Doig
Publisher	Saunders Elsevier
Year	2011
Edition	4th edition
Book Website	https://evolve.elsevier.com/productPages/s_2323.html

Assessment		
Assessment	**Expected Due Date**	**Percentage**
Evaluation	Based on an assessment sheet filled out by the training supervisors and delivered to the attention of course instructor.	20%
Practical Exam	Last week of classes	40%
Final Exam	Will be assigned and announced by the department	40%
TOTAL		**100%**

- Cheating is not a straight ethical behavior and punishment is a must. Therefore, if a student caught cheating in anyway, he/she will be given a failure grade in that exam and may be in the course (35%). *NO EXCEPTIONS OR EXCUSES*.

Course Objectives	Percentage
1. To experience the practical working environment of medical laboratories and to be train to work as part of a team with a respectful attitude to the employees and the administration	20%
2. To familiarize students on how to work under administrative regulations and to follow medical laboratories policies and procedure	20%
3. To review the technical procedures and troubleshoot problems in hematology and blood banking divisions in regard to receiving and processing biological samples, conducting technical analysis of required testing, and results interpretation	30%
4. To be aware of the quality control and quality assurance measures in hematological testing and blood banking procedures	15%
5. To familiarize students with automation in medical laboratories and its related issues	15%

Teaching & Learning Methods

- Recommended text book and/or other useful references that the student may feel comfortable with.
- Lectures and PowerPoint presentation that the student has taken during his in-campus study of relevant courses.
- Any other useful resources that satisfy the objectives of the course.

Training duration:

- 16 weeks

Course Content / requirements

Upon the successful completion of his training course, the student should be able to achieve the following specific objectives of the course.

Training period	Training topics
Training period as scheduled by the course instructor and training supervisors	**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: • 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. 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.** 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. 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 **5.** 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 **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. Therefore, a high level of knowledge is expected from the student in this regard. **9.** Blood Banking and blood transfusion issues: A. Understand all aspects of blood donation including: donor selection (criteria to accept defer, or reject a donor), blood unit collection procedures and adverse reaction to blood collection. B. Understand blood and blood components: preparation, storage and the biochemical changes that occur to the blood unit during storage. C. Understand and be familiar with compatibility testing: ABO-Rh compatibility testing, antibodies screening, antibodies identification and antibodies titration. D. Be aware of the blood release policies including under urgent and extremely urgent conditions E. Understand the adverse reaction and complication of the transfusion process which include hemolytic transfusion reactions and transfusion transmitted disease.

Additional Notes

Attendance policy:

- Students are required to attend all the training session of the course as scheduled by course instructor and training supervisor; and on that regard, students are required to sign an attendance sheet on a daily base.
- This course is a four credit hours course, and so the student is required to fulfill 12 hours of intensive training weekly (i.e. 192 hours per semester). This requires the student to spend 5 continues weeks in the division of hematology and blood banking.
- According to JUST policy; absence for more than 10% of sessions, without acceptable excuses, will lead to dismissal from the course. Even with acceptable excuses, absence of more than 15% of sessions will definitely lead to the dismissal from the course
- If the student knows that he/she will miss a class, the instructor should be informed. A verified acceptable excuse is required.
- If it is an emergency (unplanned) absence, the student is still required to provide a verifiable acceptable excuse.

Expected workload:

Student has to attend all theoretical and practical sessions of the course with a clear and open mind.
Student is expected to do his best to achieve the desired level of skills and knowledge of the materials/topics covered in the course.

Feedback:

All questions, comments and feedback are welcomed and considered through electronic emails or messages at *e-learning* site or personally through contacting me during my office hours.