Course Syllabus of Laboratory instruments

Faculty: Medicine and Health Sciences
Department: Health Sciences
Program: Bachelor in Medical Laboratory

I. General information about the course instructor :

Name	Dr. Abdulhabib Alqubaty	Office Hours(3 Hours Weekly)					
Location & phone number	770145433	Sat	Sun	Mon	Tue	Wed	Thu
Email	Alqubaty71@gmail.com				√		

II. General information about the course:

1.	Course Title :	Laboratory instruments				
2.	Course Code and Number :	BMLL 01				
3.	Credit Hours :	Credit Hours				Total
		Theoretical	Seminar/Tutorial	Practical	Training	
		2	-	-	-	2
4.	Study Level and Semester:	Elective				
5.	Pre-requisites:	None				
6.	Co-requisites:	None				
7.	Program in which the course is offered:	Bachelor in Laboratory medicine				
8.	Teaching Language:	English				
9.	Instruction location:	University of Science and Technology, Sana'a ,Yemen				

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III. Course Description

This course provides foundation knowledge on the analytic techniques and instrumentation needed for all analysis in the modern clinical laboratories including spectrophotometry, potentiometry, polarography, electrophoresis, osmometry, immunoassay, and chromatography. The course is based on lectures as well as seminars and group discussion and used written exam, oral discussion and problem solving methods for assessment.

عميد الكلية:
د. عبد الله المخلافي

رئيس القسم:
د. عبد الحبيب ردمان

١٢ / ٨

المراجع :
د. طلال القحطاني
د.مجاهد نصار

الموصف :
د. عبد الحبيب ردمان القباطي

IV. This course aimed to:

1. Familiarizes the students with the principles of techniques used in clinical laboratory.
2. Enable the students to evaluate the results obtain from the automated analyzer.
3. Enhance the students to manage the selection and acquisition of new equipment in terms of advantages, challenges, and applications.
4. Learn the students to choose the best technique for measuring different samples.
5. Provide the students with the professional and ethical concept necessary for working effectively in a groups.

V. Course Intended Learning Outcomes (CILOs) :

1. Explain the principles of techniques used in clinical laboratory.
2. Illustrate types of techniques used in clinical laboratory.
3. Evaluate the result obtain from the automated analyzer.
4. Choose the best technique for measuring different samples.
5. Select the new equipment according to advantages, challenges, and applications.
6. Identify the types of Autoanalyzers used in medical laboratories and the components, advantages and disadvantages of each type.
7. Work effectively in a group during preparation of seminars.

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VI. Course Contents				
Theoretical Aspect:				
No.	**Course Units**	**Sub-topics**	**Week due**	**Contact Hours**
1	Introduction	Course outlines	1st	2
2	Spectrometry	Electromagnetic radiation (light) Beer's Law atomic absorption spectrophotometer Flame Photometry Turbidity and Nephelometry	2nd	2
3	Fluorimetry	Electron excitation Fluorescence Fluorometer	3rd	2
4	Chemiluminescence	Luminescent Radiation during a chemical reaction	4th	2
5	Electrochemistry	Galvanic and Electrolytic Cells Ion-Selective Electrodes pH Electrodes Gas-Sensing Electrodes Enzyme Electrodes Electrophoresis Isoelectric Focusing	5th,6th	4
6	Med exam		7th	2
7	Chromatograph	Introduction Gas chromatography Column chromatography High performance chromatography Thin layer chromatography Ion Exchange Chromatography	8th	4
8	Immunoassays	Antigen Antibodies Ab & Ag reaction Radioimmunoassay (RIA) Enzyme labeled immunoassay Fluorescence labeled immunoassay Chemiluminescence labeled immunoassay Particle immunoassay	9th, 10th	4
9	Immunohistochemistry (IHC)	Immunohistochemistry Immunocytochemistry Immunophenotyping	11th	2
10	Automation in clinical laboratory	Centrifugation History of automated analyzers Basic approaches to automation Steps in automated analysis Selection of automated analyzers	12th	2
11	Amplifying	Thermal cycle Real time PCR	13th	2
12	Filed vest	Demonstration for auotoanalyzers	14th	2
13	Final exam		15th	2
Total number of weeks and hours			**15**	**30**

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