Ministry of Higher Education and Scientific research

Course syllabus

Department of …MLT

College of Health Technical

University of Erbil polytechnic university

Subject: Advanced Laboratory Techniques

Course Book – (3rd year)

Lecturer's name : Dr shler qasim and hataw jalal

Academic Year: 2023/2024

1. Course name	**Advanced Laboratory Techniques**
2. Lecturer name	**Dr.shler.qasim hussien and**
3. Department/ College	**MLT**
4. Contact	**e-mail: shler.hussien@epu.edu.iq**
5. Time (in hours) per week	**Theory: 2** **Practical: 3**
6. Office hours	**Availability of the lecturer to the student during the week 8hr.**
7. Course code	**LET503**
8. Keywords	**Diagnostic tools, Medical Checkups, MLT department.**
9. Course overview: **The overall goal**	

Teaching this course aims to help the student to accomplish various techniques related to advanced pathological analyses study and that are related to various specialized topics.

10-Course objectives:

The following affective objectives pertain to the classroom and clinical components:

1. Demonstrate professionalism by complying with the attendance policy and complying with the dress code as we

2. Demonstrate enthusiasm and interest in the profession of thickening by asking questions, participating in class d needed.

3. Demonstrate initiative by reviewing objectives and completion of reading assignments prior to class.

4. Demonstrate progression in laboratory skills by effective organization, coordination of multiple tasks and insigh

5. Participate in activities to encourage an ongoing involvement in professional development.

11.Student's obligation

- ✓ **Attendance is compulsory**
- ✓ **Students must be prepared for quiz anytime during the lecture**
- ✓ **Seminar presentation about specimen preparation and analysis**
- ✓ **Report writing about certain given topics**

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12. Forms of teaching.

Power point and data show
White board
Microscope, culture techniques and other common medical lab tools
Visiting governmental and private hospitals to get familiar with various lab devices

13. Assessment scheme

	Type of examination	Marks
	Theory	10
	Practical	20
	Seminar, report, quiz and other activities	30

	Final practical	20
	Final theory exa.	20
	Total marks	100

14. Student learning outcome:

At the end of academic year, the student should be familiar with the following techniques:

1- **Advanced tests in the field of lab with different body specimen, such as spinal fluid and spinal fluid analysis**

2- **Diagnostic immunological examinations such as a single immuno-proliferation test to diagnose complemen serum and various bodily fluids.**

3- **Immunofluorescence assays and their applications in diagnostic microscopy and immunology.**

4- **Educational tests using radioactive materials**

5- **Various tests for immunological electric migration (electrophoresis) and its modifications.**

6- **Cellular immune checks such as phagocytosis, lymphatic transformation, and others.**

7- **Techniques related to the preparation of chemical immunomodulatory by separation or preparation metho**

15. Course Reading List and References:

1. Specimen Collection and Transport for Microbiological Investigation (WHO Regional Publications, Eastern Mec Mediterranean (1995).
2. Manual of basic technique for a health laboratory (WHO, 2003).
3. Practical Immunology by Frank C. Hay, and Olwyn M.R. Westwood (2002)
4. Guide to Lab and diagnostic tests by Tracey B. Hopkins (2005)

17. The Topics:

Theory syllabus

Practical Topics	**Week**
Lab Induction	1
Examination of urine	2

Examination of stool	3
Examination of stool	4
Semen Analysis	5
Phlebotomy	6
Examination of sputum	7
Helicobacter test	8
Glucose & HbA1c tests	8
Immunology Part: Agglutination test	9
Electrophoresis	10
Cell and tissue culture	11
Haematology Part: Common blood tests techniques,	12
ELISA	13

19. Examinations:

Type of question	**Example**
Multiple choice	Which of the below answer is not correct? 10 Marks 1- The medical laboratory services play an essential role in a. Monitoring the development and spread of infectious and dangerous pathogens (disease causing organisms), b. Deciding effective control measures against major prevalent disease, c. Deciding health priorities and allocating resources. d. None of the above is correct 2- Without Reliable Laboratory Services: a. The source of a disease cannot be identified correctly. b. Patients are more likely to receive the best possible care. c. Resistance to essential drugs may not not develop. d. Epidemic diseases may not be identified on time and with confidence. 3- Doctors use laboratory tests to help: a. Identify changes in your health condition before any symptoms occur. b. Diagnose a disease or condition even before you have symptoms c. Educate patients in order to practice healthy lifestyle d. Monitor the course of a disease over time
Short answer	

Matching pairs	**Match the following statements in the column A with the definitions in the column B:**
Definition and explain	**A. How many separate random stool specimens are recommended and why?** **B. What media are used for Routine Stool Culture and why the solid type should be selective?**
Quiz	

21. Peer review **یەوەنووچادێپ ڵهواه**

This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in t

(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer

دن تاکب دنهج و کەیەشوو تێسونب رەسەل یوایش یکۆرەوان و مکەسرۆک یووژاو رەسەل تاکب.

Theory Topics
Types of laboratories and function of each unit
Medical laboratory samples
Examination of urine (GUE)
Stool examination(GSE)
Methods of Cultivation and identification of Bacteriological specimen
Vibrio cholera Cultivation and identification
Seminal fluid analysis (SFA)
Chromatography
Polymerase Chain Reaction (PCR)
Gel -Electrophoresis
Cell Fractionation: Extraction, Homogenization and Centrifugation
ELISA