

Kurdistan Region Government

Ministry of Higher Education and Scientific Research

Erbil Polytechnic University

**Module (Course Syllabus) Catalogue**

**2023-2024**

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| **College/ Institute** | **Shaqlawa Technical College** | |
| **Department** | **Medical Laboratory Technology-** | |
| **Module Name** | **Lab Technology** | |
| **Module Code** | **LAT205** | |
| **Degree** | **Technical Diploma Bachelor High Diploma Master PhD** | |
| **Semester** | **TWO** | |
| **Qualification** | **Diploma/ Bachelor** | |
| **Scientific Title** | **Lecturer** | |
| **ECTS (Credits)** | **7** | |
| **Module type** | **Prerequisite Core Assist.** | |
| **Weekly hours** | **4** |  |
| **Weekly hours (Theory)** | **(2)hr Class** | **(70)Total hrs Workload** |
| **Weekly hours (Practical)** | **(2)hr Class** | **(70)Total hrs Workload** |
| **Number of Weeks** | **12** | |
| **Lecturer (Theory)** | **Ali Zainal Omar** | |
| **E-Mail & Mobile NO.** | **alizainal@epu.edu.iq** | |
| **Lecturer (Practical)** | **Ali Zainal Omar** | |
| **E-Mail & Mobile NO.** | **07504967882** | |
| **Websites** |  | |

**Course Book**

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| **Course Description** | **In this lecture or course focusing on Lab Technology.**  ▪ Lab. technology: the material of lab technology to understanding technical and controlling laboratory work  ▪ The conception of the lecture to focusing on diagnosis of diseases via determination and testing. ▪ laboratory principles  ▪ Properties of Laboratory  ▪ my advice to employments, the employments should taking care of some material in laboratory during test or experiments because the chemical material use for this purpose are toxic and poisonous or hazardous material and some of them are carcinogenic and mutagenic mater using due to the employments strictly using lab coats, masks, gloves especially at preparing Cultures and slide. | | | | | | |
| **Course objectives** | Introducing students to Laboratory techniques, some chemical materials and equipment's that interesting in mycological experiments.  Also the students are learning how to working in lab, how student can do experiments by scientific methods.  While the students learn some role and scientific method of working they'll work weekly on different subject that has relation with the lab technology lecture. However student can repeat all tests or experiment if they need to understand much more time they can repeat it. Also all students will learn extra tests for collecting more information. | | | | | | |
| **Student's obligation** | * **Student's obligation**   Students must be attending all theoretical and practical parts. The theoretical parts studies all parts of lab. technology (Medical section) theoretically while the practical parts studies all theoretical parts practically through different experiments.  Both theoretical and practical parts link together strictly.  The students should be know how to works all equipment's are available in laboratory while taking knowledge all equipment's theoretically that un available in laboratory.  The students should be working as groups and attending reports properly. | | | | | | |
| **Required Learning Materials** | - Printouts of weekly lectures taught at the college campus  - Reviewing of internet | | | | | | |
| **Forms of teaching** | Firstly in theoretical part interesting to use of data show, white board and colourful marker properly.  Secondly in practical part interesting to use of laboratory instruments and medical tools with white board and colourful marker properly. | | | | | | |
| **Evaluation** | ‌ **Task** | | **Weight (Marks)** | | **Due Week** | | **Relevant Learning Outcome** |
| Paper Review | |  | |  | |  |
| Assignments | Homework | 5% | |  | | Encourages students to search for more detailed knowledge relevant to the topics taught at campus. |
| Class Activity | 2% | |  | |  |
|  |  | |  | |  |
| Seminar | 10% | |  | | Enhances the preparation and presenting skills of the students |
| report | 10% | |  | | To make students engage more with their favorite topics |
| Project |  | |  | |  |
| Quiz | | 8% | |  | | To encourage students, study every week. |
| Midterm Exam | | 25% | |  | | To evaluate students and their achievements at the middle of the term. |
| Final Exam | | 40% | |  | | Final evaluation and assessment. |
| Total | | 100% | |  | |  |
| **Specific learning outcome:** | **By the end of this course learners will:**  When the students takes all lecture of lab. technology and attending all practical and theoretical lecture , students will be:  Obtain much information about self-care and staff’s care .  Obtain much knowledge about biological and chemical with physical equipment's.  Taking many experience about detection of infections and sickness.  Ability to working in international laboratory and local laboratory (Public and private sector). | | | | | | |
| **Course References‌:** | * Books:   **1-Manual of medical Laboratory Techniques S Ramakrishnan and KN Sulochana. JAYPEE. 2012**  **2- Introduction to Medical Laboratory Technology,** Berhanu Seyoum, 2006  **3- Diagnostic Microbiology. Bailey and Scott̕s. 13 edition 2014** | | | | | | |
| **Course topics (Theory)** | | | | **Week** | | **Learning Outcome** | |
| **Sterilization methods& disinfection with difference physical and chemical methods** | | | | Week1 | | It will enhance developing general knowledge | |
| **Blood sample collection** | | | | Week2 | | 1-Ability to develop general knowledge  2-Knowledge and understanding of the subject area and understanding of the profession | |
| **Examination of Urine samples** | | | | Week3 | | Ability to identify, differentiate, pose and resolve problem | |
| **Seminal fluid examination** | | | | Week4 | | 1-Knowledge and understanding of the subject area and understanding of the profession  2-Ability to identify, differentiate, pose and resolve problem | |
| **Blood component and blood smear** | | | | Week5 | | 1-Ability to apply knowledge in practice  2-Ability to search for process and analyse information from a variety of sources | |
| **Bacteriology, bacterial shapes and properties** | | | | Week6 | | Ability to identify, differentiate, pose and resolve problem | |
| **Culture media , types , and methods of culturing media** | | | | Week7 | | 1-Ability to identify, differentiate, pose and resolve problem  2-Demonstrate the ability to think critically and solve problems in a laboratory setting | |
| **How to identification bacteria, bacterial staining** | | | | Week8 | | 1-Capacity to generate new ideas (creative).  2-Knowledge and understanding of the subject area and understanding of the profession | |
| **General stool examination** | | | | Week9 | | 1-Ability to act as ethical and responsible members of the health care team.  2-Demonstrates research skills to investigate, evaluate or problem solve. | |
| **Sputum examination** | | | | Week10 | | 1-Demonstrate the ability to think critically and solve problems in a laboratory setting  2-Ability to apply knowledge in practice | |
| **Serology test (reaction) antigen –antibody interaction** | | | | Week11 | | 1-Ability to search for process and analyse information from a variety of sources  2-Ability to act as ethical and responsible members of the health care team. | |
| **enzyme linked immunosorbent assay (ELIZA)** | | | | Week12 | | 1-Ability to make reasoned decision.  2-Capacity to generate new ideas (creative). | |
| **Practical Topics** | | | | **Week** | | **Learning Outcome** | |
| **Sterilization methods& disinfection with difference physical and chemical methods** | | | | Week1 | | Student be able to know the methods of sterilization and the differences between sterilization and disinfection | |
| **Phlebotomy and blood drawing** | | | | Week2 | | Learning of how to collect of blood sample | |
| **General urine examination** | | | | Week3 | | Urine collection and analysis | |
| **Sperm count and seminal fluid examination** | | | | Week4 | | Seminal fluid collection and analysis | |
| **Blood smear and identifying of blood component** | | | | Week5 | | Manual preparation of blood smear and examining under microscope | |
| **Bacterial smear preparation and identifying of bacterial shape** | | | | Week6 | | Microscopic examination of bacterial shape | |
| **Bacterial media preparation and inoculation of bacteria on culture media** | | | | Week7 | | Media preparation and inoculation of bacterial on media culture | |
| **Bacterial isolation and bacterial staining** | | | | Week8 | | Cultivation bacterial and bacterial staining | |
| **Preparation and examination of microscopic stool slide** | | | | Week9 | | Manual preparation of stool slide and examining under microscope | |
| **Preparation and examination of microscopic sputum slide** | | | | Week10 | | Manual preparation of sputum slide and examining under microscope | |
| **Serology test (reaction) antigen –antibody interaction** | | | | Week11 | | Be able to know about serological methods in diagnosing disease | |
| **ELIZA** | | | | Week12 | | Be able to know on this apparatus ELIZA | |
| **Questions Example Design (theoretical and practical exam):**  All of the activities provided in the workload section are considered when awarding you a grade for this course. In order to pass this course, you will need to earn a 60% or higher on the final exam. Your score on the exam will be calculated as soon as you complete it. If you do not pass the exam on your first try, you may take it again in the second trial.   * Type of the exam (composition and multiple choice) * Exam's duration (for example one hour) * The number of the questions: at least four questions. The marks distributed evenly throughout.   The answer should contain preface, main contents and conclusion.  Example  Q1\ ***Describe the following words below.***   1. Biosafety 2. Sterilize 3. Biohazards 4. Biological agents   ***2.******True or false type of exams:***  A- The blood is content two main parts.  B- couldn’t able to staining bacterial cell  C- The technician can eat foods and drinks in the laboratory.  D- The main laboratory samples are blood.  ***3. Multiple choices:***  A-Some disinfectant couldn’t be utilize for sterilization during work ( A, B,C,D).  B- Alcohol utilize as sterilizer such as: ( A,B,C,D).  C-The biosafety cabinet classified as …….. types ( A, B, C, D).  D-To destroy bacterial cell, interesting to use absolute alcohol (A,B,C,D).  ***4.Label the detected part as shown below*** : | | | | | | | |
| **Extra notes:** | | | | | | | |
| **External Evaluator** | | | | | | | |