

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** | **Koya technical institute** | | | | | | | | |
| **Department** | **Midwifery** | | | | | | | | |
| **Module Name** | **Clinical Chemistry** | | | | | | | | |
| **Module Code** | **Clb204** | | | | | | | | |
| **Degree** | **Technical Diploma** | | | | | **Bachelor** | |  |  |
| **High Diploma** | **Master** | | | | **PhD** | |  |
| **Module Code** | **CLB204** | | | | | | | | |
| **Semester** | **2** | | | | | | | | |
| **Qualification** | **Master** | | | | | | | | |
| **Scientific Title** | **Assist prof** | | | | | | | | |
| **ECTS (Credits)** | **6** | | | | | | | | |
| **Module type** | **Prerequisite Core** | | |  | **Assist.** | |  |  | |
| **Weekly hours** | **4** | |  | | | | | | |
| **Weekly hours (Theory)** | **(2 )hr Class** | | **( 4 ) Total hrs Workload** | | | | | | |
| **Weekly hours (Practical)** | **(2 )hr Class** | | **( 6 )Total hrs Workload** | | | | | | |
| **Number of Weeks** | **12** | | | | | | | | |
| **Lecturer (Theory)** | **Layla Kareem Ali** | | | | | | | | |
| **E-Mail & Mobile NO.** | [**layla.ali@epu.edu.iq**](mailto:layla.ali@epu.edu.iq) **, 07501049043** | | | | | | | | |
| **Lecturer (Practical)** | **Layla Kareem Ali**  **Alla** Jafar **, Dligan Said Bapeer and Rewas** | | | | | | | | |

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| **Websites** | **epu.edu.iq** |

# Course Book

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| **Course Description** | **Clinical chemistry** Refers to the biochemical analysis of body fluids. It uses chemical reactions to determine the levels of various chemical compounds in bodily fluids. Several simple chemical tests are used to detect and quantify different compounds in blood and urine, the most commonly tested specimens in clinical chemistry. Techniques such as spectrophotometry, immunoassays, and electrophoresis are also used in clinical chemistry to measure the concentration of substances such as glucose, lipids, enzymes, electrolytes, hormones, proteins, and other metabolic products present in human blood and urine. |
| **Course objectives** | **This course aims to provide comprehensive theoretical knowledge in clinical chemistry including kidney, liver and limits for all chemical tests, diagnosis**  **and disease treatment and advanced practical training** |

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|  | **in this diverse field** |
| **Student's obligation** | **The student is given his rights and he must carry out his duties. The student must attend the classroom and medical laboratories and attend assignments such as facades, applications, classroom medical exercises, write reports, attend seminars and conferences at specified times, visit hospitals, get acquainted with modern medical devices, respect doctors and professors**  **Student learning goals for the clinical chemistry practicum focus on active**  **... Student's obligation**  **The student attention in all theoretical and practical lectures in -1**  **.academic year**  **.Completion of all tests -2**  **Attendance in exams -3**  **..prepare reports .4** |
| **Required Learning Materials** | **You should always know your lab equipment well before you do any type of experiment because without the proper knowledge of your equipment you will not know how to use your materials or how to correct a mistake that you could make with your equipment.**  **analytical instruments include mass spectrometers, chromatographs (e.g. GC and HPLC), titrators, spectrometers (e.g. AAS, X-ray, and fluorescence), particle size analyzers, rheometers, elemental analyzers (e.g. salt analyzers, CHN analyzers), thermal analyzers, and more.** |

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| **Evaluation** | **Task** | | **Weight (Marks)** | **Due Week** | **Relevant Learning Outcome** |
| Paper Review | |  |  |  |
| Assignments | Homework | 5 |  |  |
| Class Activity | 2 |  |  |
| Report | 5 |  |  |
| Seminar | 5 |  |  |
| Essay | ----- |  |  |
| Project | ------ |  |  |
| Quiz | | 8 |  |  |
| Lab. | | 10 |  |  |
| Midterm Exam | | 25 |  |  |
| Final Exam | | 40 |  |  |
| Total | | 100 |  | **The final degree is**  **(100) degrees** |
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|  | **1- Define key terms associated with Clinical Chemistry 2- Explain immediate care needs for Clinical Chemistry**  **3- Identify the Chemical characteristics of the Clinical Chemistry. 4- Explain reflexes of the Clinical Chemistry.**   1. **Describe behavioral characteristics of the Clinical Chemistry** 2. **Describe gestational age assessment of the Chemistry Interpret diagnostic tests for the newborn.** 3. **Analyze nutritional considerations for the newborn.** 4. **Explain selected procedures related to Clinical Chemistry.** 5. **Recognize cultural diversity in the management of Clinical Chemistry.**   Explain teaching and learning for **Clinical Chemistry** Evaluate expected outcomes of  **Energy and speed of chemical reactions; unit conversions and their importance in clinical medicine; molecular interactions and chemical** | | | | |

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|  | 10- |
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|  | 1-Blaack, EE; Saris, WHM (1995). "Health Aspects of Various |
|  | Digestible |
|  | Carbohydrates". *Nutritional Research* ***15*** *(10): 1547-73.* |
|  | 2-Jenkins, DJ; Jenkins, AL; Wolever, TM; Josse, RG; Wong, GS |
|  | (1984). "The |
|  | glycaemic response to carbohydrate foods". *The Lancet* ***324****: 388–* |
|  | *391.* |
|  | 3-Wolever, Thomas M. S. (2006), *The Glycaemic Index: A* |
|  | *Physiological m, Classification of Dietary Carbohydrate*, CABI, pg. |
|  | 65. |
|  | 4-HSPH (Harvard School of Public Health) (2014): Carbohydrates and |
|  | Blood, Sugar". *The Nutrition Source*. |
|  | 5-Watanabe, Hirofumi; Hiroaki Noda; Gaku Tokuda; Nathan Lo (1998). |
|  | "A, cellulase gene of termite origin". *Nature 394 (6691): 330–331.* |
| **Course References:** | 6-Roman AH and Conway T. (1996): Evolution of carbohydrate metabolic, pathways, *Res Microbiol 147 (6-7): 448-55.* |
|  | 7-Keller, Ralser and Tutchyn (2014): Non enzymatic glycolysis and petose |
|  | phosphate pathway like reactions in a plausible Archean ocean. *Mol.* |
|  | *Syst.Biol. 10: p.725.* |
|  | 8. Pharmacology for Nurses and Allied professions . KD chauhuri and pk |
|  | chaudhuri, 342 |
|  | pages Roprint 2002. ISBN 61 – 7179 – 438 – 6. Price 150 . 00 |
|  | 9. Textbook of medical Biochemistry |
|  | MN chatterjea and Rana shinde. Seventh Edition. 824 Pages 2007. |
|  | ISBN 81 – |
|  | 8448 – 134 – 9 |
|  | 10, Textbook of Biochemistry |

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refer ence val ues. J Clin C hem Clin Bi ochem 1987; 25: 657‐662.

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|  | | DM vasudevan and sreekumariS. Fifth Edition, 552 pages 2007, ISBN 81 –  8448 – 124 – 1  11. K Sembulingam and prema sembulingam . Fourth Edition, 988 pages , 2006  ISBN 81 – 8061 – 826 – 9 | | | | |
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| **The Topics: Clinical chemistry syllabus (Theory)** | | | | |  |
| weeks | Subjects | | | |
| 1 | Introduction, Define the Clinical chemistry, Patient preparation | | | |
| 2 | Serum and plasma, and the differences between them, Blood clotting, Coagulation | | | |
| 3 | Carbohydrates, type of carbohydrates | | | |
| 4 | Diabetes mellitus, Classes of diabetes mellitus disease | | | |
| 5 | Several types of blood glucose tests | | | |
| 6 | Cholesterol, type of cholesterol | | | |
| 7 | Cholesterol Levels, The relation between LDL and HDL | | | |
| 8 | Types of lipid profile test | | | |
| 9 | Kidney Function, Symptoms of Kidney Problems | | | |
| 10 | Kidney problems | | | |
| 11 | Estimated Glomerular Filtration Rate (GFR) | | | |

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|  | 12 | Types of Kidney Function Tests |  |
| Practical  **weeks** **Subjects**   1. Spectrophotometer, calibration of the spectrophotometer 2. Beer lambared law, and application in the clinical chemistry fields 3. Centrifuge and applications 4. Taken sample of the blood and how can the separation the plasma of the serum 5. Blood sugar test 6. HBA1c test 7. blood sugar testes in strep 8. examination 9. Cholesterols test 10. Try glycerides test 11. HDL and LDL test 12. Kidney function (Urinalysis) | | | |

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