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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** | **Medical laboratory technique** | |
| **Module Name** | **Clinical Chemistry** | |
| **Module Code** | **CLC 301** | |
| **Degree** | **Technical Diploma Bachelor High Diploma Master PhD** | |
| **Semester** | **Third** | |
| **Qualification** | **Master** | |
| **Scientific Title** | **Assist prof** | |
| **ECTS (Credits)** | **5** | |
| **Module type** | **Prerequisite Core Assist.** | |
| **Weekly hours** | **4** | **127** |
| **Weekly hours (Theory)** | **(2 )hr Class** | **( ) Total hrs Workload** |
| **Weekly hours (Practical)** | **(2 )hr Class** | **( )Total hrs Workload** |
| **Number of Weeks** | **12** | |
| **Lecturer (Theory)** | **Layla Kareem Ali** | |
| **E-Mail & Mobile NO.** | **layla.ali@epu.edu.iq** | |
| **Lecturer (Practical)** | **layla.ali@epu.edu.iq**  **Darya Omer** | |
| **E-Mail & Mobile NO.** | **07507949173** | |
| **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 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**  **1-The student attention in all theoretical and practical lectures in academic year.**  **2- Completion of all tests.**  **3- Attendance in exams**  **4. prepare reports..** | | | | | | |
| **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.** | | | | | | |
| **Evaluation** | ‌ **Task** | | **Weight (Marks)** | | **Due Week** | **Relevant Learning Outcome** | |
| Paper Review | |  | |  |  | |
| Assignments | Homework | 5 | | 2 | **(3-5) A degree for homework and the student prepares himself to answer the questions directed to him**. | |
| Class Activity | 2 | |  | **The activity inside the classroom has a special importance for students, especially the outstanding students, and it encourages the underperforming to raise their educational level** | |
| Report | 5 | | 10 | **Writing (1) a report in each semester that is a factor in gaining information for the student** | |
| Seminar | 5 | | **Submit (1) a report in each semester to encourage students to present other seminars.** | |
| Essay | ----- | |  |  | |
| Project | ------ | |  |  | |
| Quiz | | 8 | | 2 | **sing 2-4 Ques is useful for the student to know about the tests and to be able to answer the questions addressed to him** | |
| Lab.report | | 10 | |  |  | |
| Midterm Exam theory  Midterm Exam practical | | 1o  15 | |  | **The score for the midterm exam is as follows: 6 marks for the theory and 10**  **marks for practical** | |
| Final Exam | | 40 | |  | **The final exam (40) degree (of 15 theoretical exam and practical exam 25 degrees)** | |
| Total | | 100 | |  | **The final degree is (100) degrees** | |
|  | The Mid Term Exam (Practical and Theory)  (16) degrees  (6) Theory degree  (10) Score of the Practical test  (2) Cause. Each pin is 2 degrees  4 = (2x 2)  (40) degrees for (Rapport, seminar, recitation, homework, class activity  \* For (1) Rapport (12) degrees  12 degrees = (12x1)  \* Seminars for each (12) tiger  \* 12 degrees = (12x1)  \*\* Homework. For every homework assignment, grade is 7  \*\* 14 degrees. = 2 x 7  Activity in the class = (2) degree.  degree 25 = final practical  final theory = 15 degree | | | | | | |
| **Specific learning outcome:** | **he energy and speed of chemical reactions; unit conversions and their importance in clinical medicine; molecular interactions and chemical** | | | | | | |
| **Course References‌:** | . Dybkaer R, Solberg HE. Approved recommendaons on the theory of reference values. Part 6. Presentaon of observed values related to  reference values. J Clin Chem Clin Biochem 1987; 25:657‐662.  8.  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.*  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  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) | | 12 | Types of Kidney Function Tests | | | | | | | |
| **Extra notes:** | | | |  |  | |
| **External Evaluator** | | | |  |  | |
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