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**Department of pharmacy**

**Medical Institute**

**University of Hawler polytechnique**

**Subject: pharmaceutical chemistry**

**Course Book – 2nd stage**

**Lecturer's name : Shilan Ali Omer**

**Academic Year: 2023/2024**

**Course Book**

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| **1. Course name** | **Pharmaceutical chemistry** | |
| **2. Lecturer in charge** | **Shilan ali omer** | |
| **3. Department/ College** | **pharmacy /medical institute** | |
| **4. Contact** | **e-mail: shilan.umer@epu.edu.iq** | |
| **5. Time (in hours) per week** | **Theory: 2**  **Practical: 2** | |
| **6. Office hours** | **Tuesday 9.30-12.30** | |
| **7. Course code** |  | |
| **8. Teacher's academic profile** | **I graduated from the collage of science, department of chemistry. I have got M.Sc. in 2008. I have got my Ph.D. in 2020.** | |
| **9. Keywords** | **Acidity and Basicity, preparation of alcohols and elements** | |
| **10. Course overview:**  **Pharmaceutical chemistry Studying Pharmaceutical Chemistry gives you the chance to explore all the fundamentals of organic chemistry, biochemistry and pharmacology while developing a specialist in pharmaceutics. Throughout the course you’ll be building up your knowledge and getting to practise the skills that are sought after by a wide range of industries.** | | |
| **11. Course objective:**  **1. Provided with the principles of limit tests.**  **2.Familiar with different classes of inorganic pharmaceuticals and their analysis**  **3. Identification of different anions, cations and different inorganic pharmaceuticals.**  **4. Knowledge about the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals.**  **5.understand the medicinal and pharmaceutical importance of inorganic compounds**  **6. To have been introduced to a variety of inorganic drug classes.** | | |
| **12. Student's obligation**  **The students are obliged to attend to the class room. Student also enforced to make examination ,prepare reports and presentation**  **.** | | |
| **13. Forms of teaching**  **The kind of teaching method include :data show, PowerPoint, white board and reports** | | |
| **14. Assessment scheme**  **Monthly theory exam :10 marks**  **Practical exam :15 marks**  **Final theory exam :20 marks**  **Final practical :30 marks ‌** | | |
| **15. Student learning outcome:**  **The student will be familiar with main topics in pharmaceutical chemistry which concerned with drugs, anions and cations and their applications** | | |
| **16. Course Reading List and References‌:**  **1-"https://www.alibris.com/The-Organic-Chemistry-of-Drug-Design-and-Drug-Action-Richard-B-Silverman/book/7898154**  **2- Https://www.alibris.com/Wilson-and-Gisvolds-Textbook-of-Organic-Medicinal-and-Pharmaceutical-Chemistry/book/28612124**  **1-asian journal of research in chemistry and pharmaceutical sciences**  **2-austin journal of analytical and pharmaceutical chemistry** | | |
| **17. The Topics:** | | **Shilan ali omer** |
| **Course programmed**  **Week 1: Organic Pharmaceutical Chemistry, Types of Functional Groups**  **Week 2 : Iron, chemical properties of iron, medical use**  **Week 3: Magnesium, chemical properties of magnesium, medical use**  **Week 4: Calcium , chemical properties of calcium, medical use**  **Week 5 : Zinc, chemical properties of zinc, medical use**    **Week 6 : Sulphur, chemical properties of sulphur, medical use**  **Week 7 : Phosphorus, chemical properties of phosphorus, medical use**    **Week 8 : Aluminium, chemical properties of aluminium, medical use**    **Week 9 : Alcohol, classification, identification, preparation of alcohol, Commercial preparation of alcohols**  **Week 10: Ethers, classification, identification, preparation of ethers.**  **Week 11 : Aldehydes and ketones, identification, sources, properties and their preparation**  **Week 12: Carboxylic acids, identification, sources, properties and their preparation.** | | **(2 hrs)** |
| **18. Practical Topics (If there is any)** | |  |
| **Week 1**  **Synthesis of Aspirin**  **Week 2**  **Preparation of Benzimidazol**  **Week 3**  **Preparation of Benzocaine**  **Week 4**  **Preparation of Benzoic acid**  **Week 5**  **Preparation of Acetanilide**  **Week 6**  **Test for identification of organic pharmaceutical compound like (hydrocarbons, paraffin, alcohols, ethers, aldehyde, ketone, carboxylic acid)**  **Week 7**  **Purification test for some pharmaceutical compound**  **Week 8**  **Type of solutions and normality and preparation of solutions**  **Week 9,10**  **Standarazation of most inorganic compound with test as they taken in the theoretical part**  **Week 11, 12**  **Standarazation of most organic compound with test as they taken in the theoretical part** | | **(2 hrs)** |
| ***-------------------------------------------------------------------------------------------------------------***  Q1Q1/Fill the following with scientific words:- (40 Marks)   1. 1- Alcohols and ethers have similar ---------------------------to those present in --------------------------. 2. 2-Hemoproteins are responsible for ----------------------------------------- and ------------------------------------------------. 3. 3- Magnesium stearate is used as --------------------------in the preparation of ------------------------------. 4. 4- The antidote for zinc poisoning is ---------------------------------------------. 5. 5-Zinc has many therapeutic uses like-------------------------------------------------------------------------------------------------------------------------------------and helps to --------------------------------------------.   Q2/Q2/ Answer the following questions:- (30 Marks)  A- A- Why amino group are generally stronger electron donating group than either alcohols or ethers?  B- B- Define Anemia and mention the factors that cause anemia.  C- C- Why alkyl groups are not similar to alcohol?  Q3/Q3/Answer the following questions:- (30 Marks)  A-A- Classify alcohol according to the number of hydroxyl groups present in the molecule, and explain by an example?  B-B- What are the general methods for the preparation of alcohol? | | |
| 20. Extra notes:  No more notes | | |
| 21. Peer review | | |