**Course Description**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Faculty** | **Pharmacy** | | | | | | |
| **Department** | Pharmaceutical Chemistry | | | **Level** | | | 7 |
| **Course** | **General Chemistry** | **Code** | **1703111** | **Prerequisite** | | |  |
| **Credit hours** | 3 | **Theoretical** |  | **Practical** | | |  |
| **Coordinator** |  | **Email** |  | | | | |
| **Teachers** | Dr. Mousa Magharbeh | **Emails** |  | | | | |
| **Lecture Time** |  | **Place** |  | | **Attendance mode** | Face to face | |
| **Semester** |  | **Preparation date** |  | | **Modification Date** |  | |

|  |
| --- |
| **Abstracted Course Description** |
| Safety and laboratory rules; chemical observations; volumetric analysis; oxidation and reduction; colligative properties; thermochemistry and equilibrium |
| **Course Goals** |
| * **To learn how to treat the measured data and numbers** * **To learn chemical reaction’s calculations** * **To learn thermal energy and heat change in chemical reactions** * **To learn properties of solutions and gases** * **To learn about the periodic table and its tunable properties** * **To learn about the different acidity and basicity media of solutions** * **To learn the principles of equilibrium and how to apply it** * **To learn hydrocarbons (alkanes , alkenes , alkynes and aromatics)nomenclature and reactions** |
| CILOs |
| Knowledge |
| A1 Know the measurements and data treatment, chemical calculation and chemical equilibrium , deal with the solutions and gases,  A2 know the preparation of solutions and deal with the elements in periodic table, deal with the different types of chemical reactions,  A3 take back ground about atomic structure and thermo chemistry. Hydrocarbons (alkanes , alkenes and alkynes)nomenclature and reactions |
| Skills |
| B1 To be able to treat the data and deal with the periodic table .  B2 To be able to apply the knowledge from their study in preparing the solutions.  B3 To be able to do chemical calculation |
| Competencies |
| C1 To be able to distinguish between different types of reaction  C2 Naming hydrocarbons and distinguish between them ,reactions of hydrocarbons  C3 To do calculations with good precision and accuracy |
| Learning Methods |
| * Lectures * Oral dissection * Assignment |
| Evaluation Tools |
| Exams  Quiz |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Week** | Topics to be Covered | **Learning methods** | **Evaluation tool** | **ILOs** | **Hours** |
| **1.** | Introduction. What is chemistry? The scientific method, the international system of Units (SI). Measurements and significant figures. | Textbook and handouts | QUIZ | **A 3** | **1** |
| **2.** | Atoms, Molecules and Moles. Characterization of atom. The modern view of atomic structure. An introduction to the periodic table. | Textbook and handouts |  | **A 2** | **1** |
| **3.** | Stoichiometry. Atomic masses. The mole concepts. Molar mass. Percentage composition of compounds. Determining the formula of a compound. Chemical equations and balancing. Calculations. Theoretical and percentage yield. | Textbook and handouts |  | **A 1** | **1** |
| **4.** | Types of chemical reactions and solution stoichiometry. | Textbook and handouts |  | **A 3** | **1** |
| **5.** | Water, the common solvent. Strong and weak electrolytes. The composition of solution. Types of chemical reactions. Precipitation reactions and solubility rule. Equations complete, molecular and ionic. Acid - base reactions and titration .pH. Oxidation states. Oxidizing and reducing agents. Oxidation- Reduction reactions. Balancing redox equations. | Textbook and handouts |  | **B 2** | **1** |
| **6.** | Atomic structure and periodic table. | Textbook and handouts | Exam | **B 1** |  |
| **7.** | Quantum numbers. Orbital shapes and energy. Electron spin and pauli principle. Electron configurations. Periodic trends | Textbook and handouts | Exam | **B 2** | **1** |
| **8.** | Bonding: general concepts. (sections: 8.5 , 8.6, 8.7, 8.8 are excluded )Types of chemical bonds, electronegativity , bond polarity and dipole moments, ions : , ionic character of covalent bonds | Textbook and handouts | **C 3** | **1** |
| **9.** | Lewis structures, resonance, molecular structure: the VSEPR model.(shapes of molecules ) | Textbook and handouts | Exam | **C 1** | **1** |
| **10.** | Liquids and solids : intermolecular forces , the liquid state, vapor pressure of solution, factors affecting vapor pressure. Changes of states | Textbook and handouts | **C 2** | **1** |
| **11.** | Properties of solutions: solution composition and units , factors affecting solubility , the energy of solution formation, colligative properties | Textbook and handouts | Homework | **A 3** | **1** |
| **12.** | Equilibrium: the equilibrium concepts, equilibrium Constants, Kb, Kc, LeChatelier,s principle, factors affecting equilibrium | Textbook and handouts | **C 2** | **1** |
| **13.** | Equilibrium: the equilibrium concepts, equilibrium Constants, Kb, Kc, LeChatelier,s principle, factors affecting equilibrium | Textbook and handouts | Exam | **A1** | **1** |
| **14.** | Equilibrium: the equilibrium concepts, equilibrium Constants, Kb, Kc, LeChatelier,s principle, factors affecting equilibrium |  | Exam | **C3** | **1** |
| **15.** | Final exam |  |  |  | **2** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Plan of Course Evaluation** | | | | | | | | | | | | | **Evaluation Tools** | | **Mark** | **ILOs** | | | | | | | | | | **A1** | **A2** | **A3** | **B1** | **B2** | **B3** | **C1** | **C2** | **C3** | | **First Exam (Mid-term)** | | **30%** | \* | \* |  |  | \* |  |  |  | \* | | **Second Exam (If available)** | |  |  |  |  |  |  |  |  |  |  | | **Final Exam** | | **50%** |  |  |  |  |  | \* | \* | \* |  | | **Activities** | | **20%** |  | | | | | | | | | | **Activities Evaluation** | Homework/Tasks | 10% |  |  |  | \* | \* |  | \* |  |  | | Case Study |  |  |  |  |  |  |  |  |  |  | | Discussion and Interactions |  |  |  |  |  |  |  |  |  |  | | Group Activities |  |  |  |  |  |  |  |  |  |  | | Laboratory Exams |  |  |  |  |  |  |  |  |  |  | | Presentations |  |  |  |  |  |  |  |  |  |  | | Quizzes | 10% |  | \* |  |  | \* | \* |  |  | \* | | Others |  |  |  |  |  |  |  |  |  |  | | **Total** | | 100% |  |  |  |  |  |  |  |  |  |   **Components** | |
| **Book** | **chemistry by S. Zumdahl 4th Ed ., 1990 5th ed., 1997 ., 6th ed. 2003** |
| **References** | **chemistry by S. Zumdahl 4th Ed ., 1990 5th ed., 1997 ., 6th ed. 2003** |
| **Recommended Readings** |  |
| **Electronic materials** |  |
| **Other websites** |  |

**Subject Coordinator:**

**Head of Curriculum Committee:**

**Department Head:**

**Faculty Dean:**

**Last update date**