**Course-3 Title: Chemistry**

**Course Code: CHE 111 Credit: 3.00 Contact Hour: 3 per week Total marks: 100**

**11.1 Rationale:** A computer scientist or engineer may choose to be expert in cheminformatics or computational chemistry. Therefore, he or she should have a sound knowledge and deep understanding of chemistry.

**11.2 Objectives:**

1. Know the periodic table.
2. Understand the characteristics of the noble gases and their behaviors.
3. Identify and compare among different chemical bonds.
4. Understand chemical kinetics.

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| **11.3**  **Learning Outcomes** | **11.4**  **Course Content** | **11.5**  **Teaching / Learning Strategy** | **11.6 Assessment Strategy** |
| * explain Atomic structure, quantum numbers, electronic configuration | | Atomic structure, quantum numbers, electronic configuration | Lecture, Assignment | Short answer, Essay, Assignment |
| * identify elements in periodic table | | periodic table | Lecture, Assignment | Short answer, Essay |
| * explain the properties and uses of noble gases | | Properties and uses of noble gases | Lecture, Assignment | Short answer, Essay |
| * identify and explain chemical bonds * compare chemical bonds | | Different types of chemical bonds and their properties | Lecture, Assignment | Short answer, Essay |
| * identify and explain molecular structures | | Molecular structures of compounds | Lecture, Assignment | Short answer, Essay |
| * explain organic reactions * identify and explain different types of solutions and their compositions * compare different types of solutions * explain the properties of dilute solutions. | | Selective organic reactions, Different types of  solutions and their compositions. Properties of dilute solutions | Lecture, Assignment | Short answer, Essay |
| * define phase rule * explain phase rule and phase diagram | | Phase rule, phase diagram of mono component system. | Lecture, Assignment | Short answer, Essay |
| * explain thermo chemistry and chemical equilibrium * apply chemical kinetics * explain ionizations of water and pH | | Thermo chemistry, chemical kinetics, chemical equilibrium, Ionizations of water. and pH concept | Lecture, Assignment | Short answer, Essay |
| * explain electrical properties of solutions | | Electrical properties of solutions | Lecture, Assignment | Short answer, Essay |

**RECOMMENDED BOOKS AND PERIODICALS**

**References:**

As per course teacher’s recommendation