**Course Description Form**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. Course Name: | | | | | | | | |
| **Coordination chemistry 1** | | | | | | | | |
| 1. Course Code: | | | | | | | | |
| **305CHCC1** | | | | | | | | |
| 1. Semester / Year: | | | | | | | | |
| First semester /Third year | | | | | | | | |
| 1. Description Preparation Date: | | | | | | | | |
| 1/10/2024 | | | | | | | | |
| 1. Available Attendance Forms: | | | | | | | | |
| mandatory | | | | | | | | |
| 1. Number of Credit Hours (Total) / Number of Units (Total) | | | | | | | | |
| 30h – 3 units | | | | | | | | |
| 1. Course administrator's name (mention all, if more than one name) | | | | | | | | |
| Name: Assist. prof. Dr. Areej Ali Jarullah  Email: [dr.areej977@uodiyala.edu.iq](mailto:dr.areej977@uodiyala.edu.iq)  Assist. prof. Jinan Mohammed Mahmood  [jinan.mohammed@uodiyala.edu.iq](mailto:jinan.mohammed@uodiyala.edu.iq) | | | | | | | | |
| 1. Course Objectives | | | | | | | | |
| **Course Objectives** | | | | |  | | --- | | Teaching the student inorganic chemical reactions and chemical structures, knowledge of the structure of inorganic compounds and how to clarify the mechanics of inorganic reactions and their practical applications aimed at developing and keeping pace with the scientific development of inorganic chemistry | | Teaching and educating students on all necessary and necessary information related to inorganic chemistry, which qualifies them to work and research in all areas of inorganic chemistry | | | | | |
| 1. Teaching and Learning Strategies | | | | | | | | |
| **Strategy** | | Explanation and clarification  Lecture method and questioning method  Model display method | | | | | | |
| 1. Course Structure | | | | | | | | |
| **Week** | **Hours** | | **Required Learning Outcomes** | | **Unit or subject name** | | **Learning method** | **Evaluation method** |
| 1 | **2** | | Introduction to the chemistry of transitional elements, Some periodic properties and oxidation states of transition elements | | Transitional elements | | Board and  data show | Daily exams  Homework  Monthly exams |
| 2 | **2** | | A historical look at the development of coordination chemistry, Chain theory, Warner’s coordination theory | | Coordination Chemistry | | = | = |
| 3 | **2** | | Coordination number, Types of ligands, Nomenclature of coordination complexes, | | Coordination Chemistry | | = | = |
| 4 | **2** | | Isomerism in metal Complexes | | Coordination Chemistry | | = | = |
| 5 | **2** | | The effective atomic number | | Theories that explain the coordination complexes | | = | = |
| 6 | **2** | | Valance bond theory- Hybridization of atomic orbitals | | Theories that explain the coordination complexes | | = | = |
| 7 | **2** | | Crystal field theory | | Theories that explain the coordination complexes | | = | = |
| 8 | **2** | | Crystal field stabilization energy for strong and weak field complexes, A comparison between valence bond theory and crystal field theory | | Theories that explain the coordination complexes | | = | = |
| 9 | **2** | | First exam - first semester | |  | |  |  |
| 10 | **2** | | Molecular orbital theory, Orbital Symmetry | | Theories that explain the coordination complexes | | = | = |
| 11 | **2** | | Various preparation methods, Substitution reactions in aqueous and non-aqueous solvents and in the absence of the solvent, Thermal dissociation of complexes, oxidation- reduction reactions | | Methods for preparing the coordination complexes and  their interactions | | = | = |
| 12 | **2** | | ligand mechanism (SN1, SN2) | | Methods for preparing the coordination complexes and  their interactions | | = | = |
| 13 | **2** | | Homogeneous and heterogeneous catalytic Agents, | | Catalysis | | = | = |
| 14 | **2** | | Preparation isomerism of cis and trans. | | Trans effect | | = | = |
| 15 | **2** | | Second exam - first semester | |  | |  |  |
|  | | | | | | | | |  | Second Exam |  |  |  |
| Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc | | | | | | | | |
| 1. Learning and Teaching Resources | | | | | | | | |
| Required textbooks (curricular books, if any) | | | | | | Inorganic chemistry - chemistry of  transition elements, principles of coordination, Dr. Noman Al-Naimi and  others. | | |
| Main references (sources) | | | | | | -Inorganic chemistry, Catherine  E. Housecroft and Alan G. Sharpe,  3rd ed., 2008.  -Inorganic chemistry, Catherine  E. Housecroft and Alan G. Sharpe,  4th ed., 2012.  -Inorganic chemistry, James E. Huheey,  Ellen A. Keiter and Richard L. Keiter,  4th ed.,1993. | | |
| Recommended books and references (scientific journals, reports...) | | | | | |  | | |
| Electronic References, Websites | | | | | |  | | |