

Ankara University
Library & Documentation Department

Open Course Materials

Working Plan (Working Schedule)

Weeks	Subject Heading Weekly
1 st Week	<p>MOLECULAR ORBITAL THEORY (MOT)</p> <ul style="list-style-type: none"> ○ Interaction of atomic orbitals, Molecular orbital energy diagrams of A₂, AB, AB₂, AB₃ and AB₄ type molecules
2 nd Week	<p>COORDINATION CHEMISTRY</p> <ul style="list-style-type: none"> ○ Basic concept of coordination chemistry, Coordination compounds, Ligands, Developments in coordination chemistry
3 th Week	<p>NOMENCLATURE OF COORDINATION COMPOUNDS</p> <ul style="list-style-type: none"> ○ Nomenclature of coordination compounds
4 th Week	<p>ISOMERISM IN COORDINATION COMPOUNDS</p> <ul style="list-style-type: none"> ○ Structural isomerism (Ligand isomerism, Ionization isomerism, Hydrate (solvent) isomerism, Coordination isomerism, Linkage isomerism, Polymerization isomerism) and Stereoisomerism (Diastereoisomerism (Geometrical (c-s-/trans-) isomerism, Conformation isomerism), Optical isomerism)
5 th Week	<p>18 ELECTRON RULE [EFFECTIVE ATOMIC NUMBER (EAN) RULE]</p> <ul style="list-style-type: none"> ○ Werner complexes, Carbonyl complexes (metal carbonyls), Nitrosil complexes, Dinitrogen complexes, Dioxygen complexes
6 th Week	<p>18 ELECTRON RULE [EFFECTIVE ATOMIC NUMBER (EAN) RULE]</p> <ul style="list-style-type: none"> ○ Olefin complexes, Alkyne complexes, Arene complexes, Cyclopentadienyl complexes
7 th Week	<p>VALANCE BOND THEORY</p> <ul style="list-style-type: none"> ○ Linear complexes, Tetrahedral complexes, Square planar complexes, Octahedral complexes
8 th Week	<p>CRYSTAL FIELD THEORY (CFT)</p> <ul style="list-style-type: none"> ○ Basic concept of CFT, The orbital splitting diagrams for octahedral, tetrahedral and square planar complexes
9 th Week	<p>CRYSTAL FIELD THEORY (CFT)</p> <ul style="list-style-type: none"> ○ Calculation of crystal field stabilization energy or crystal field splitting energy (CFSE) in octahedral, tetrahedral and square planar complexes, The orbital splitting diagrams for other complexes
10 th Week	<p>CRYSTAL FIELD THEORY (CFT)</p> <ul style="list-style-type: none"> ○ Jahn-Teller effect (tetragonal distortion), 10Dq parameter and electronic spectra, Spectrochemical series, Factors affecting CFSE, Effects of crystal field splitting
11 st Week	<p>MOLECULAR ORBITAL THEORY IN COORDINATION COMPOUNDS</p> <ul style="list-style-type: none"> ○ Octahedral complexes (σ-Bonding, n-Bonding), Tetrahedral complexes and Square planar complexes
12 nd Week	<p>SOLIDS</p> <ul style="list-style-type: none"> ○ Classifications of solids and crystals, Unit cell, clarifications of crystal structures using X-ray crystallography, Ionic solids (radii ratio r^+ / r^-, crystal defects, stacking in solids, AX (ZnS, NaCl, CsCl) and AX₂ (CaF₂, TiO₂, SiO₂) type compounds, layered structures (CdI₂, CdCl₂, NiAs), structures containing polyatomic ions, other lattices
13 th Week	<p>SOLIDS</p> <ul style="list-style-type: none"> ○ Lattice energy, Born-Haber cycle, Applications of lattice energy (determination of electron, ion and proton affinities and finding enthalpies of disproportionation and formation)
14 th Week	<p>METALS</p> <ul style="list-style-type: none"> ○ Metallic character and physical properties of metals (electrical and thermal conductivity of metals, brightness of metals, thermoionic and photoelectric phenomena in metals, crystal structure of metals, ability to be beaten and withdrawn properties in metals, metal alloying feature, Theories related to bonding in metals (free electron theory, valence bond theory, molecular orbital theory), conductors, semiconductors and insulators, superconductors