Ankara University
Library & Documentation Department
Open Course Materials
Working Plan (Working Schedule)

Weeks	Subject Heading Weekly
1st Week	**ATOMIC MODELS** ○ Atom, Dalton atomic theory, Thomson atomic model, Black body radiation, Electromagnetic spectrum, The photoelectric effect
2nd Week	**ATOMIC MODELS** ○ Bohr atomic model, Calculation of Bohr radius, Energies of Bohr orbitals, Developments after the Bohr atom model and Orbital.
3th Week	**ATOMIC MODELS** ○ Quantum atomic model (Heisenberg uncertainty principle, de Broglie wavelength, Schrödinger wave equation), Quantum numbers (The principal quantum number, The angular quantum number or the angular momentum quantum number, The magnetic quantum number, The spin quantum number), Aufbau principle, Pauli Principle, Hund rule, Multiplicity
4th Week	**ATOMIC MODELS** ○ Quantum atomic model (Effective nuclear charge Z* and Slater's rules and Magnetic properties)
5th Week	**ATOMIC MODELS** ○ Vector model of atom (Energies of terms (Hund's selectivity rule), The ground state term symbol, Finding atomic term symbols, Spectroscopic transitions)
6th Week	**PERIODIC PROPERTIES OF ATOMS** ○ Periodic table, Electron configurations of atoms, Atomic size (Covalent radius, Metallic radius, Ionic radius, Van der Waals radius), The lanthanide contraction
7th Week	**PERIODIC PROPERTIES OF ATOMS** ○ Ionization energy, Methods for calculating the ionization energy [Finding ionization energy of a single-electron system, Finding ionization ener gy for isoelectronic systems, Finding ionization energy by using Slater method, Finding ionization energy by solution of Schrödinger equation (Clamenti Raimondi), Finding ionization energy by the spectroscopic method (valence orbital ionization energy)]
8th Week	**PERIODIC PROPERTIES OF ATOMS** ○ Electron affinity
9th Week	**PERIODIC PROPERTIES OF ATOMS** ○ Electronegativity [Pauling electronegativity, Mulliken electronegativity, Mulliken-Jaffe electronegativity, Alred-Rochow electronegativity, Sanderson electronegativity, Gordy electronegativity, Electronegativity of functional groups, Allen electronegativity (spektroscopik electronegativity), Hybridization and electronegativity, Benefits of electronegativity value, Equilibrium of electronegativity]
10th Week	**CHEMICAL BONDING** ○ Classification of chemical bonds, Intermolecular chemical bonds (Ionic bonds, Covalent bonds (Apolar covalent bonds, Polar covalent bonds, Coordinate covalent bonds), Metallic bonds)
11st Week	**CHEMICAL BONDING** ○ Hybridization and Valence shell electron pair repulsion (VSEPR) theory
12nd Week	**CHEMICAL BONDING** ○ Formal charge, Resonance, Resonance and stability of resonance structures, Bond Order, Bond energy and Bond length, The contribution of σ and π bonds to multiple bonds, Bond force constant and bond energy, Bond energy and bond length, Use of bond energies to determine molecular structure and reaction enthalpy, Dipol moment
13th Week	**POLARIZATION THEORY** ○ Polarizing power and polarization, Fajans rules, Transition between ionic and covalent bond
14th Week	**ACIDS AND BASES** ○ Acid-Base Definitions (Arrhenius definition, Bronsted-Lowry definition, Definition of solvent system, Lewis sefinition, Gutman definition, Lux-Flood definition, Usanovich definition, Generalized definition, Ingold-Robinson definition, Definition of hard-soft acid-base), Power in acids and bases, Superacids