**Biology**

**1.The Living World**
--Classification
--Levels of organization

**2.Cell Biology**
--Chemical Components of a Cell
--Elements and inorganic compounds
--Lipids, carbohydrates, proteins and nucleic acids colloidal systems
--Cellular Metabolism
--Enzymes
--Energy production in glycolysis, Krebs cycle and terminal oxidation Photosynthesizes
--The biosynthesis of lipids, carbohydrates, proteins and nucleic acids
--Cellular Ultrastructure (Organelles), Cellular physiology, Membrane transport
--Endocytosis and exostosis
--The action potential cellular movements

**3.Organic Biology**
--Nutrition
--Respiration
--Excretion
--Circulation Locomotion
--Reproduction
--Sexual an asexual reproduction growth and development
--Regulation
--Homeostasis and regulation by hormones
--Nervous regulation
--The nervous system
--The synapse and neurotransmitters
--Autonomic nervous system
--The spinal cord
--The brain
--Memory and sleep
--Perception
--Receptors and perceptive organs
--The evolution of the systems listed above
--Structure and function of the corresponding human-organs
--Animal behavior
--Innate and learned behavior

**4.The Environment**--Ecology, ecosystems
--Food chains, limiting factors, cycles in nature
--Populations and communities

**5.Genetics**--Molecular genetics
--Properties of the genetic material
--Mutation, recombination
--The genetic code
--The operon
--Classical genetics
--Modes of inheritance (discontinuous traits)
--Linkage
--Sex chromosomes

**6.Evolution**
--Population genetics
--Chemical and biological evolution
--Human evolution

**Chemistry**

###### 1. General Chemistry --Atomic theory. Classification of matter. Elements and compounds

######  --Basic terms: atomic and mass numbers, isotopes, the mole concept, atomic and molar masses --Basic structure of atoms. Electronic structure of atoms: quantum numbers and atomic orbitals

######  --The periodic table. Periodic properties

######  --Chemical bonding: ionic, covalent and metallic bonding

######  --Intermolecular forces

######  --Naming of molecular and ionic substances --States of matter; changes of state. Properties of

###### gases and liquids --Properties of solids. Types of crystal lattice

######  --Lewis structures. Geometry of molecules

######  --Solutions, solubility. Ways of expressing concentration

######  --Chemical reactions: types of inorganic chemical reactions. Stoichiometry

######  --Chemical reactions: rate of chemical reactions. Catalysts

###### --Thermochemistry. Heat of chemical reactions. Hess's law

###### --Chemical equilibrium. Law of mass action --Acids and bases. The pH

###### --Electrochemistry: electrode potential, electrochemical cells --Electrolysis

######  2. Inorganic Chemistry --Non-metals --Metals --d-Block elements

######  3. Organic Chemistry --Properties of carbon. Functional groups. Types of organic chemical reactions --Alkanes. Alkyl groups --Alkenes and alkynes --Aromatic hydrocarbons --Alkyl halides --Alcohols --Ethers and phenols --Aldehydes and ketones --Carboxylic acids. Substituted carboxylic acids --Amines --Heterocyclic compounds --Stereochemistry. Isomerism. Optical activity --Carbohydrates. Conformation of monosaccharides --Monosaccharides, disaccharides and oligosaccharides --Amino acids, peptides and proteins --Carboxylic acid derivatives. Lipids --Nucleic acids

**--Continuous traits genetic counselling**

 **6.Evolution
--Population genetics
--Chemical and biological evolution
--Human evolution**