Syllabus Of Science Olympiad:

The student will have to prepare according to the below syllabus guidelines:

Syllabus	Life Science	Physical Science
Grade 2, 3 and 4	• Characteristics of living things • Basic needs of living things • Structures and functions of plants • Structures and functions of animals • Parts and functions of the human body • Major organs of the human body • Classification of animals – vertebrates and invertebrates • Basic plant and animal adaptations to their environment • Simple food chain • Roles in ecosystem – producers, consumers, decomposers	• Definition of matter • Classification of matter • Characteristics of solid, liquid, gases • Sorting objects as solid, liquid, gases • Measuring volume and mass • Definition of force • Effects of force on matter • Definition of energy • Types of energy – potential and kinetic • Forms of energy • Types of weather • Members of the solar system
Grade 5 and 6	• Human body systems – parts and functions • Basic parts and functions of the cell • Comparing prokaryotes and eukaryotes • Plant reproduction – natural and artificial • Reproductive parts of the plants • Seed germination • Life cycle of plants • Animal reproduction – internal and external reproduction • Life cycle of animals (i.e., insects, frog, mammal) • Complete and incomplete metamorphosis • Behavioral and structural adaptations of plants and animals • Classification of animals based on the food they eat • Food chain and food web • Nutrient cycle (carbon, water, oxygen, nitrogen)	• Basic structure of an atom • Subatomic particles • Atom vs molecule • Element vs compound • Physical and chemical properties of matter • Physical and chemical changes in matter • Motion in one dimension • Speed vs velocity • Distance vs displacement • Acceleration • Transformation of energy • Energy sources • Heat vs temperature • Circuits • Phases of the moon • Seasons and tides • The Milky Way • Types of galaxies • Minerals and rocks • Rock layers and soil formation
Grade 7 and 8	• Levels of biological organization • Human body systems – parts, functions, and interactions • Cell structure and function • Cell theory • Comparing plant and animal cells • Vascular and nonvascular plants • Angiosperm and gymnosperm • Levels of ecological organization	• Classification of matter – pure substances and mixtures • Phase changes • The Periodic Table of Elements • Chemical symbols and formulas • Law of conservation of mass • Two-dimensional motion • Newton's laws of motion • Work, power, and energy

Grade 7 & 8 CONT..	• Biotic and abiotic factors of ecosystem • Food chain, food web, and transfer of energy in ecosystem • Interactions in ecosystem (symbiotic and non-symbiotic relationships) • Microorganisms – bacteria, fungi, and protists • History of life and earth formation (different eras)	• Transformation of energy (potential to kinetic and vice versa) • Magnetism • Rock cycle • Types of rocks • Weathering, erosion, and deposition • The Universe
Grade 9 and 10	• Human body systems – illnesses affecting organs • Human reproduction • Cell cycle • Cell division – mitosis and meiosis • Prokaryotes and viruses • Energy pyramid and trophic levels • Carrying capacity and limiting factors • Factors affecting the population in an ecosystem • Biodiversity and sustainability • Mendel's experiments • Laws of inheritance (Mendelian and non-Mendelian • Human genome and chromosome • Punnett square – monohybrid and dihybrid cross • Genetic disorders	• Atomic theory • Isotopes and average atomic mass • Chemical reactions • Parts of a chemical equation • Balancing a chemical equation • Momentum • Newton's law of gravitation • Waves and energy • Electromagnetic waves • Electromagnetism • Optics • Fossilization • History of earth – ice cores • Stars • The Big Bang Theory
Grade 11 and 12	• Human body systems – homeostasis and feedback mechanisms • Cell mutation • Central dogma of molecular biology (DNA – structure and replication) • Genetic engineering and ethical issues in biotechnology • Biomolecules (carbohydrates, lipids, proteins, nucleic acids) • Polymers • Invertebrate diversity, evolution, and classification • Vertebrates' diversity, evolution, and classification • Phylogeny and cladistics • Theory of evolution and natural selection • Forces of evolution • Population genetics	• Scientific notation and significant figures • Accuracy and precision • Dimensional analysis • Valence electrons • Electron configurations • Chemical bonding • Endothermic and exothermic reactions • Redox reaction • Chemical nomenclature • The Special Theory of Relativity • Kepler's law • Laws of stratigraphy • Relative and absolute dating (computing half-life) • Expansion of universe • Dark matter

The Sample / Past papers are available on the website : www.icccenter.com

Thank you