Singapore Junior Chemistry Olympiad (SJChO) Training

Course Syllabus

Lesson	Topic	Contents
1	Kinetics	• Reaction Rate • Collision Theory • Kinetic Molecular Theory
2		• Rate Laws and Integrated Rate Laws • Activation Energy • Catalysis
3	Thermochemistry	• Thermodynamics • Enthalpy • Entropy
4	Quantum Theory	• Electronic Structure of Atoms • Quantum Numbers
5	Periodicity	• Effective Nuclear Charge • Periodic Trends • Diagonal Relationships
6	Chemical Bonding	• Lattice Energy of Ionic Compounds • Chemical Bonding
7	Molecular Geometry	• VSEPR Theory • Dipole Moments
8	IMF and Basic Organic Chemistry	• Intermolecular Forces • Surface Tension and Viscosity
9	Organic Chemistry	• Functional Groups and Mechanisms • Alkanes • Alkenes
10		• Alcohols • Carboxylic Acids • Nomenclature
11		• Hybridisation • Nucleophiles • Electrophiles
12	Equilibria	• Equilibrium and Reaction Quotient • ICE Table • Le Chatelier's Principle
13	Acids and Bases	• Definitions of Acids and Bases

		• pH • Acid-Base Buffers
14	Redox Reactions	• Redox Reactions • Galvanic Cells and Electrolysis • Extraction of Metals
15	Solubility	• Solubility • Complex Formation • Applications to Titration
16	Gases and Liquids	• Ideal Gas Law • Dalton's Law • Kinetic Molecular Theory
17	Inorganic Chemistry	• Real Gases and Liquids • Qualitative Analysis
18	Separational Techniques	• Liquid-Liquid Extraction • Chromatography • Drug Targeting Receptors
19	Isomerisation	• Structural and Stereoisomers
20	Organic Compound Testing	• Testing for Organic Compounds