IB CHEMISTRY

Stoichiometric Relationships

- Introduction to the Particulate Nature of Matter and Chemical Change
- The Mole Concept
- Reacting Masses and Volumes

Atomic Structure

- The Nuclear Atom
- Electron Configuration

Periodicity

- Periodic Table
- Periodic Trends

Chemical Bonding and Structure

- Ionic Bonding and Structure
- Covalent Bonding
- Covalent Structures
- Intermolecular Forces
- Metallic Bonding

Energetics/Thermochemistry

- Measuring Energy Changes
- Hess's Law
- Bond Enthalpies

Chemical Kinetics

- Collision Theory and Rates of Reaction

Equilibrium

- Equilibrium

Acids and Bases

- Theories of Acids and Bases
- Properties of Acids and Bases
- The pH Scale
- Strong and Week Acids and Bases
- Acid Deposition

Redox Processes

- Oxidation and Reduction
- Electrochemical Cells

Organic Chemistry

- Fundamentals of Organic Chemistry
- Functional Group Chemistry

Measurement and Data Processing

- Uncertainties and Errors in Measurement and Results
- Graphical Techniques
- Spectroscopic Identification of Organic Compounds

Atomic Structure Additional Higher Level (AHL)

- Electrons in Atoms

The Periodic Table – The Transition Metals (AHL)

- First-Row D-Block Elements
- Colored Complexes

Chemical Bonding and Structure (AHL)

- Covalent Bonding and Electron Domain and Molecular Geometries
- Hybridization

Energetics/Thermochemistry (AHL)

- Energy Cycles
- Entropy and Spontaneity

Chemical Kinetics (AHL)

- Rate Expression and Reaction Mechanism
- Activation Energy

Equilibrium (AHL)

- The Equilibrium Law

Acids and Bases (AHL)

- Lewis Acids and Bases
- Calculations Involving Acids and Bases
- pH Curves

Redox Processes (AHL)

- Electrochemical Cells

Organic Chemistry (AHL)

- Types of Organic Reactions
- Synthetic Routes
- Stereoisomerism

Measurement and Analysis (AHL)

- Spectroscopic Identification of Organic Compounds

Materials (Option)

- Materials Science Introduction
- Metals and Inductively Coupled Plasma (ICP) Spectroscopy
- Catalysts
- Liquid Crystals
- Polymers
- Nanotechnology
- Environmental Impact-Plastics
- Superconducting Metals and X-Ray Crystallography (AHL)
- Condensation Polymers (AHL)
- Environmental Impact-Heavy Metals (AHL)

Biochemistry (Option)

- Introduction to Biochemistry
- Proteins and Enzymes
- Lipids
- Carbohydrates
- Vitamins
- Biochemistry and the Environment
- Proteins and Enzymes (AHL)
- Nucleic Acids (AHL)
- Biological Pigments (AHL)
- Stereochemistry in Biomolecules (AHL)

Energy (Option)

- Energy Sources
- Fossil Fuels
- Nuclear Fusion and Fission
- Solar Energy
- Environmental Impact-Global Warming
- Electrochemistry, Rechargeable Batteries and Fuel Cells (AHL)
- Nuclear Fusion and Nuclear Fission (AHL)
- Photovoltaic and Dye-Sensitized Solar Cells (AHL)

Medicinal Chemistry (Option)

- Pharmaceutical Products and Drug Action
- Aspirin and Penicillin
- Opiates
- pH Regulation of the Stomach
- Anti-Viral Medications
- Environmental Impact of Some Medications
- Taxol-a Chiral Auxiliary Case Study (AHL)
- Nuclear Medicine (AHL)
- Drug Detection and Analysis (AHL)