Aims of Chemistry Curriculum

The broad aims of the Chemistry Curriculum are to enable students to :

- develop interest and maintain a sense of wonder and curiosity about chemistry ;
- construct and apply knowledge of chemistry, and appreciate the relationship between chemistry and other disciplines ;
- appreciate and understand the evolutionary nature of science ;
- develop skills for making scientific inquiries ;
- develop the ability to think scientifically, critically and creatively, and solve problems individually and collaboratively in chemistry-related contexts ;
- discuss science-related issues using the language of chemistry ;
- make informed decisions and judgements on chemistry-related issues ;
- develop open-mindedness, objectivity and pro-activeness ;
- show appropriate awareness of working safely ;
- understand and evaluate the social, ethical, economic, environmental and technological implications of chemistry, and develop an attitude of responsible citizenship.

Syllabus for Form 3

Estimated Time Allocation for the Chemistry Curriculum

Topics		**Sub-topics**	**No. of hours**
0.	Fundamentals of Chemistry	a. What is Chemistry about? b. Importance of studying Chemistry c. Making observations, analysis and interpretation in Chemistry d. Laboratory safety e. Common apparatus in the chemistry laboratory	3
I.	Planet Earth	a. The Atmosphere b. The Ocean c. Rocks and Minerals	15
II.	Microscopic World I	a. Atomic Structure b. The Periodic Table	10
	Extension	a. Alloys b. Useful materials from crude oil c. Environmental problems associated with the use of materials	2
		Total:	**30**

F.4 Chemistry Curriculum
(Compulsory Part)

Topics		**Sub-topics**	**No. of hours**
II.	Microscopic World I	a. Metallic Bond b. Structures and Properties of Metals c. Ionic and Covalent Bond d. Structures and Properties of Giant Ionic Substances e. Structures and Properties of Simple Molecular Substances f. Structures and Properties of Simple Molecular Substances g. Comparison of Structures and Properties of important types of substances	24
III.	Metals	a. Occurrence and Extraction of Metals b. Reactivity of Metals c. Reacting masses d. Corrosion of Metals and their Protection	22
IV.	Acids and Bases	a. Introduction to acids and alkalis b. Indicators and pH c. Strength of acids and alkalis d. Salts and neutralization e. Concentration of solutions f. Volumetric Analysis involving acids and alkalis	27
V.	Fossil Fuels and Carbon Compounds	a. Hydrocarbons from Fossil Fuel b. Homologous series, structural formulae	10
VII.	Redox Reactions, Chemical Cells and Electrolysis	a. Redox reactions	6
		Total:	**89**

F.5 Chemistry Curriculum
(Compulsory Part)

Topics		**Sub-Topics**	**No. of hours**
V.	Fossil Fuels and Carbon Compounds	a. Alkanes and Alkenes b. Polymers	10
VII.	Redox Reactions, Chemical Cells and Electrolysis	a. Chemical Cells in daily life b. Reactions in simple chemical cells c. Redox reactions in chemical cells d. Electrolysis e. Importance of redox reactions in modern ways of living	20
VI.	Microscopic World II	a. Bond Polarity b. Intermolecular forces c. Structures and Properties of Molecular Crystals d. Simple Molecular substances with non-octet structures e. Shapes of Simple molecules	8
XI.	Chemistry of Carbon Compounds	a. Introduction to selected homologous series b. Isomerism c. Typical reactions of various Functional Groups d. Inter-conversions of Carbon Compounds e. Important Organic Substances	27
VIII.	Chemical Reactions and Energy	a. Energy Changes in Chemical Reactions b. Standard Enthalpy Change of Reactions, Neutralisation, Formation and Combustion c. Hess's Law	9
IX.	Rate of Reaction	a. Rate of Chemical Reaction b. Factors affecting Rate of Reaction c. Molar Volume of Gases at room temperature and pressure	9
X.	Chemical Equilibrium	a. Dynamic Equilibrium b. Equilibrium Constant c. The effect of changes in concentration and temperature on chemical equilibria	10
XI.	Patterns in the Chemical World	a. Periodic variation in physical properties of the elements b. Bonding, stoichiometric composition and acid-base properties of the oxides c. General properties of transition metals	8
		Total:	**101**

Estimated Time Allocation for F.6 Chemistry Curriculum
(Elective Part)

Elective Part (select any 2 out of 3)			
Topics		**Sub-Topics**	**No. of hours**
XIII.	Industrial Chemistry	a. Importance of Industrial Processes b. Rate Equation c. Activation Energy d. Catalysis and Industrial Processes e. Industrial Processes f. Green Chemistry	26
XV.	Analytical Chemistry	a. Detecting the presences of chemical species b. Separation and Purification Methods c. Quantitative Methods and Analysis d. Instrumental Analytical Methods e. Contribution of Analytical Chemistry to our Society	26
		Total:	**52**