

Chemistry Syllabus Outline Year 3

Year 3 Economics Semester 1

Classification Of Matter

- 1.1 Solids, liquids and gases
- 1.2 Melting and boiling points
- 1.3 Elements, molecules and compounds
- 1.4 Elements and compounds
- 1.5 Solutions and suspensions
- 1.6 Emulsions and gels
- 1.7 Solubility

Atomic Structure

- 2.1 Atomic structure
- 2.2 Atomic number, mass number, mass and isotopes

The Periodic Table

- 3.1 The Periodic Table of the elements
- 3.2 Groups and periods
- 3.3 Chemical properties

Reporting Experiments and Safety

- 9.1 Safety in the lab
- 9.2 Writing reports

Chemistry Syllabus Outline Year 3

Year 3 Economics Semester 2

The Reactivity Series

- 4.1 The story of metals
- 4.2 Metal uses and their ores
- 4.3 The reactivity series of the elements
- 4.4 Extracting metals
- 4.5 Protecting metals and batteries

Bonding

- 5.1 Why compounds form?
- 5.2 The ionic bond
- 5.3 Naming ionic compounds
- 5.4 The covalent bond
- 5.5 Physical properties of covalent substances
- 5.6 The metallic bond
- 5.7 Bonding and structure

Acids and Alkalis

- 6.1 Acids and bases I
- 6.2 Acids and bases II
- 6.3 Reactions of acids
- 6.4 Reactions of bases

Chemistry Syllabus Outline Year 4

Year 4 Economics Semester 1

Chemical Equations

- 7.1 Chemical equations
- 7.2 The mole
- 7.3 Moles in solutions
- 7.4 Moles in gases
- 7.5 Calculations from equations

Organic Chemistry

- 8.1 Organic chemistry
- 8.2 The carbon cycle
- 8.3 Fossil fuels
- 8.4 Naming alkanes and alkenes
- 8.5 Polymers

Types of reactions

- 9.1 Combustion
- 9.2 Corrosion
- 9.3 Fermentation
- 9.4 Decomposition and electrolysis

Chemistry Syllabus Outline Year 4

Year 4 Economics Semester 2

Rates of chemical reactions

- 10.1 Rate of reactions
- 10.2 Measuring rates
- 10.3 Temperature and concentration
- 10.4 Surface area and catalysts
- 10.5 Collision theory

Some industrial processes

- 11.1 The blast furnace
- 11.2 Aluminium production
- 11.3 Fertilizers

Theory of Knowledge

- 12.1 Where do the elements come from
- 12.2 Scientific proofs and facts

Chemistry Syllabus Outline Year 4

Year 4 Lisa Language Semester 1

Classification Of Matter

- 1.1 Solids, liquids and gases
- 1.2 Melting and boiling points
- 1.3 Elements, molecules and compounds
- 1.4 Elements and compounds
- 1.5 Solutions and suspensions
- 1.6 Emulsions and gels
- 1.7 Solubility

Atomic Structure

- 2.1 Atomic structure
- 2.2 Atomic number, mass number, mass and isotopes

The Periodic Table

- 3.1 The Periodic Table of the elements
- 3.2 Groups and periods
- 3.3 Chemical properties

Reporting Experiments and Safety

- 9.1 Safety in the lab
- 9.2 Writing reports

Chemistry Syllabus Outline Year 4

Year 4 Lisa Language Semester 2

The Reactivity Series

- 4.1 The story of metals
- 4.2 Metal uses and their ores
- 4.3 The reactivity series of the elements
- 4.4 Extracting metals
- 4.5 Protecting metals and batteries

Bonding

- 5.1 Why compounds form?
- 5.2 The ionic bond
- 5.3 Naming ionic compounds
- 5.4 The covalent bond
- 5.5 Physical properties of covalent substances
- 5.6 The metallic bond
- 5.7 Bonding and structure

Acids and Alkalis

- 6.1 Acids and bases I
- 6.2 Acids and bases II
- 6.3 Reactions of acids
- 6.4 Reactions of bases

Chemical Equations

- 7.1 Chemical equations

Chemistry Syllabus Outline Year 6 Economics

Teaching lessons ca. 70

Topic 1: Atomic Structure 5 lessons

- 1.1 The atom
- 1.2 The mass spectrometer
- 1.3 Electron arrangement

Topic 2: Periodicity 7 lessons

- 2.1 The periodic table
- 2.2 Physical properties
- 2.3 Chemical properties

Topic 3: Bonding 14 lessons

- 3.1 Ionic bonding
- 3.2 Covalent bonding
- 3.3 Intermolecular forces
- 3.4 Metallic bonding
- 3.5 Physical properties

Topic 4 : Quantitative chemistry 14 lessons

- 4.1 The mole concept and Avogadro's constant
- 4.2 Formulae
- 4.3 Chemical equations
- 4.4 Mass and gaseous volume relationships in chemical reactions
- 4.5 Solutions

Topic 5: Kinetics 6 lessons

- 5.1 Rates of reaction
- 5.2 Collision theory

Topic 6: Equilibrium 6 lessons

- 6.1 Dynamic equilibrium
- 6.2 The position of equilibrium

Practical lessons ca. 17 lessons

Chemistry Syllabus Outline Year 7 Economics Core

Teaching lessons ca. 40

Topic 7: Energetics 9 lessons

- 7.1 Exothermic and endothermic reactions
- 7.2 Calculations of enthalpy changes
- 7.3 Hess's law
- 7.4 Bond enthalpies

Topic 8: Measurements and data processing 3 lessons

- 8.1 Uncertainty and error in measurement
- 8.2 Uncertainties in calculated results
- 8.3 Graphical techniques

Topic 9: Acids and bases 8 lessons

- 9.1 Theories of acids and bases
- 9.2 Properties of acids and bases
- 9.3 Strong and weak acids and bases
- 9.4 The pH scale

Topic 10: Oxidation and reduction 8 lessons

- 10.1 Introduction to oxidation and reduction
- 10.2 Redox equations
- 10.3 Reactivity
- 10.4 Voltaic cells
- 10.5 Electrolytic cells

Revision of year 6 and year 7 12 lessons

Chemistry Syllabus Outline Year 8 Economics Core

Teaching lessons ca. 40

Topic 11: Organic chemistry

30 lessons

- 11.1 Introduction to organic chemistry
- 11.2 Alkanes and alkenes
- 11.3 Alcohols and halogenoalkanes
- 11.4 Reaction pathways
- 11.5 Nucleophilic substitution reactions
- 11.6 Elimination reactions
- 11.7 Condensation reactions
- 11.8 Reaction pathways
- 11.9 Stereochemistry

Revision of year 6, 7 and year 8

10 lessons

Chemistry Syllabus Outline Year 7 Languages Core

Teaching lessons ca. 40

Topic 1: Atomic Structure 5 lessons

- 1.1 The atom
- 1.2 The mass spectrometer
- 1.3 Electron arrangement

Topic 2: Periodicity 7 lessons

- 2.1 The periodic table
- 2.2 Physical properties
- 2.3 Chemical properties

Topic 3: Bonding 14 lessons

- 3.1 Ionic bonding
- 3.2 Covalent bonding
- 3.3 Intermolecular forces
- 3.4 Metallic bonding
- 3.5 Physical properties

Topic 4 : Quantitative chemistry 14 lessons

- 4.1 The mole concept and Avogadro's constant
- 4.2 Formulae
- 4.3 Chemical equations
- 4.4 Mass and gaseous volume relationships in chemical reactions
- 4.5 Solutions

Chemistry Syllabus Outline Year 8 Languages Core

Teaching lessons ca. 40

Topic 7: Energetics

9 lessons

- 5.1 Exothermic and endothermic reactions
- 5.2 Calculations of enthalpy changes
- 5.3 Hess's law
- 5.4 Bond enthalpies

Topic 8: Measurements and data processing

3 lessons

- 6.1 Uncertainty and error in measurement
- 6.2 Uncertainties in calculated results
- 6.3 Graphical techniques

Topic 9: Acids and bases

8 lessons

- 7.1 Theories of acids and bases
- 7.2 Properties of acids and bases
- 7.3 Strong and weak acids and bases
- 7.4 The pH scale

Topic 10: Oxidation and reduction

8 lessons

- 8.1 Introduction to oxidation and reduction
- 8.2 Redox equations
- 8.3 Reactivity
- 8.4 Voltaic cells
- 8.5 Electrolytic cells

Revision of year 6 and year 7

12 lessons