

Scheme of work – Cambridge IGCSE[®] Chemistry (0620)

Overview

The aim of this scheme of work is to set out a progression through the syllabus content, and to give ideas for activities, together with references to relevant resources.

The scheme of work generally follows the 2012 and 2013 syllabus, but the order in which topics are covered has been adjusted to give a coherent flow to the course. The syllabus has been sub-divided into twelve units, each covering a theme.

The scheme of work is intended to give ideas to teachers upon which they can build. It is certainly not intended that teachers undertake all of the activities shown in the various units but rather to offer choices which could depend on local conditions.

The progression through these themes has been designed to build on students' own experiences, and to ensure that students have sufficient basic knowledge and understanding to tackle the more challenging issues.

Outline

The units within this scheme of work are:

- Unit 1: Experimental techniques**
- Unit 2: Particles, atomic structure, ionic bonding and the Periodic Table**
- Unit 3: Air and water**
- Unit 4: Acids, bases and salts**
- Unit 5: Reaction rates**
- Unit 6: Metals and the Reactivity Series**
- Unit 7: Covalent bonding**
- Unit 8: Organic 1**
- Unit 9: Amount of substance**
- Unit 10: Organic 2**
- Unit 11: Redox, electrochemistry and Group VII**
- Unit 12: Equilibria**

Details of unit structure

Unit 1: Experimental techniques

- 1.1 Measurement
- 1.2 Criteria for purity
- 1.3. Methods of purification

Cross-referenced to assessment objectives A2-4, B1-7, C1-4

Unit 2: Particles, atomic structure, ionic bonding and the Periodic Table

- 2.1 The particulate nature of matter
- 2.2 Atomic Structure and the Periodic Table
- 2.3 Bonding: the structure of matter
- 2.4 Ions and ionic bonds
- 2.5 The Periodic Table
- 2.6 Periodic trends
- 2.7 Group I

Cross-referenced to assessment objectives A1-5, B1-6, C1-4

Unit 3: Air and water

- 3.1 Water
- 3.2 Air
- 3.3 Noble gases

Cross-referenced to assessment objectives A1-5, B1-5, C1-3 and Unit 2

Unit 4: Acids, bases and salts

- 4.1 The characteristic properties of acids and bases
- 4.2 Types of oxides
- 4.3 Carbonates
- 4.4 Preparation of salts
- 4.5 Identification of ions and gases

Cross-referenced to assessment objectives A1-5, B1-7, C1-4 and Units 1 & 2

Unit 5: Reaction rates

- 5.1 Energetics of a reaction
- 5.2 Rate (speed) of a reaction

Cross-referenced to assessment objectives A1-5, B1-7, C1-4 and Unit 2

Unit 6: Metals and the Reactivity Series

- 6.1 Metallic bonding
- 6.2 Properties of metals
- 6.3 Reactivity Series
- 6.4 Extraction of metals
- 6.5 Uses of metals
- 6.6 Transition metals

Cross-referenced to assessment objectives A1-5, B1-6, C1-4 and Units 2, 3 & 4

Unit 7: Covalent bonding

- 7.1 Molecules and covalent bonds
- 7.2 Macromolecules

Cross-referenced to assessment objectives A1-4, B1-5, C1-3 and Units 2 & 6

Unit 8: Organic 1

- 8.1 Naming of compounds
- 8.2 Fuels
- 8.3 Homologous Series
- 8.4 Alkanes
- 8.5 Alkenes
- 8.6 Production of energy

Cross-referenced to assessment objectives A1-5, B1-5, C1-3 and Units 2 & 7

Unit 9: Amount of substance

- 9.1 Stoichiometry
- 9.2 The mole concept

Cross-referenced to assessment objectives A1-5, B1-7, C1-3 and Unit 2

Unit 10: Organic 2

- 10.1 Alcohols
- 10.2 Acids
- 10.3 Macromolecules
- 10.4 Synthetic polymers
- 10.5 Natural macromolecules

Cross-referenced to assessment objectives A1-5, B1-5, C1-3 and Units 7 & 8

Unit 11: Redox, Electrochemistry and Group VII

- 11.1 Redox
- 11.2 Electricity and chemistry
- 11.3 Extraction of aluminium
- 11.4 Group VII

Cross-referenced to assessment objectives A1-5, B1-6, C1-3 and Units 2 & 6

Unit 12: Equilibria

- 12.1 Reversible reactions
- 12.2 The Haber process
- 12.3 Sulfur

Cross-referenced to assessment objectives A1-5, B1-6, C1-3 and Unit 5

Teacher support

The up-to-date list of resources for this syllabus can be found on the University of Cambridge International Examinations website www.cie.org.uk. In addition, the password-protected Teacher Support website at <http://teachers.cie.org.uk> provides access to specimen and past question papers, mark schemes and other support materials. We offer online and face-to-face training; details of forthcoming training opportunities are posted on the website.

Resources

Cambridge IGCSE Chemistry webpage

www.cie.org.uk/qualifications/academic/middlesec/igcse/subject?asdef_id=840

Cambridge Students – University of Cambridge International Examinations

www.cambridgestudents.org.uk/subjectpages/chemistry/

Chemistry for IGCSE, R. Norris & R. Stanbridge, Nelson Thornes, 2009. ISBN 9781408500187

Royal Society of Chemistry Electronic Databook

www.rsc.org/education/teachers/resources/databook/

Video clips on the various methods of extraction:

www.rsc.org/Education/Teachers/Resources/Alchemy/

Excellent suite of video clips on various elements of the Periodic Table:

periodicvideos.com/

Video clips on various molecules from Nottingham University:

periodicvideos.com/molecularvideos.htm

Excellent worksheets for teaching IGCSE Chemistry.

Chemistry Experiments, J. A. Hunt, A. Geoffrey Sykes, J. P. Mason, Longman 1996, ISBN 0582332087

Some very useful experimental worksheets:

www.practicalchemistry.org/experiments/

schools.longman.co.uk/gcsechemistry/worksheets/index.html

Animation and video clips on particles, separating techniques and states of matter:

Royal Society of Chemistry Particles in Motion, CD ROM, 2006.

Variety of resources for IGCSE Chemistry

www.chalkbored.com/lessons/chemistry-11.htm

An excellent source of background notes for teaching IGCSE Chemistry

www.chemguide.co.uk/

Useful revision sites:

www.bbc.co.uk/schools/gcsebitesize/science/

www.docbrown.info

www.gcsescience.com/science-chemistry-links.htm

® IGCSE is the registered trademark of University of Cambridge International Examinations.

© University of Cambridge International Examinations 2011.