

Cambridge TECHNICALS LEVEL 3

# APPLIED SCIENCE

Unit 1 – Science fundamentals

RESOURCE LINKS

Version 2

Cambridge  
TECHNICALS  
2016

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# INTRODUCTION

Resource Links is an e-resource, provided by OCR, for teachers of Cambridge Technicals. It provides descriptions of, and links to, a variety of teaching and learning resources that you may find helpful.

Where appropriate, we have mapped the resources to this OCR unit/learning outcomes (LOs) and provided information about their cost and format.

If you know of other resources you would like to see included here, or discover broken links, please let us know. We would also like to hear from you if have any feedback about your use of these, or other, OCR resources. Please contact us at [resources.feedback@ocr.org.uk](mailto:resources.feedback@ocr.org.uk)

To find out more about this qualification, go to: <http://www.ocr.org.uk/qualifications/vocational-education-and-skills/cambridge-technicals-applied-science-level-3-certificate-extended-certificate-foundation-diploma-diploma-extended-diploma-05847-05849-05879-05874-2016-suite/>



Cambridge  
TECHNICALS  
2016

## 2016 Suite

- New suite for first teaching September 2016
- Externally assessed content
- Eligible for Key Stage 5 performance points from 2018
- Designed to meet the DfE technical guidance

## TYPES OF RESOURCE

### OCR Produced Resources

These are resources devised and produced directly by the Resources Development Team at OCR.

### Publisher Partner Resources

For many subjects OCR works with a publisher partner to ensure that good quality resources such as textbooks are available for first teaching.

Whilst the publisher partner has access to our subject experts and we quality check and endorse these resources they are produced by, and remain the property of, the publisher partner. There is no financial link between OCR and its publisher partners and we do not pay for the development of, or receive any royalties from, these resources.

### Endorsed Resources

These resources were produced entirely independently of OCR, but we have quality checked them for their suitability as a resource to support our qualifications.

### Other Resources

Unless specifically stated these resources are completely independently produced and are not endorsed by OCR. We have looked at them though, and we think they could be useful in supporting our specifications.

We leave it to you, as a professional educator, to decide if any of these resources are right for you and your students, and how best to use them.

# LINKS

## Periodic Table

This interactive site, from the Royal Society of Chemistry, provides not only a copy of the periodic table but the ability to roll over the individual elements and read the key chemical features e.g. isotopes, electronic configuration, density, ionisation energy. It also enables the learner to select specific groups, blocks and periods, thus aiding the understanding of the structure of the table. There are podcasts and videos for each element.

**Supports:** LO1

**Cost:** Free

**Format:** Web page, with options for podcasts and video

<http://www.rsc.org/periodic-table>

## Learn Chemistry

An online resource from the Royal Society of Chemistry which includes information, educational resources and tests, lesson plans and topics, training and curricula. Can be filtered for age group, audience (learner or tutor). Can be used to access booklets, videos, simulations and handouts.

**Supports:** LO1

**Cost:** Free

**Format:** Web page

<http://www.rsc.org/learn-chemistry/resource/listing?searchtext=&reference=students&filter=all&fAudience=AUD00000002&fLevel=LEV00000005&fAudience%2cAudience=AUD00000002>

<http://www.rsc.org/learn-chemistry/resource/listing?searchtext=&reference=students&filter=all&fAudience=AUD00000001&fLevel=LEV00000005>

## Chemical Misconceptions

The Royal Society of Chemistry has produced a comprehensive and invaluable range of downloadable information and revision questions on this topic, some 695. There are options for podcasts and videos.

**Supports:** All LOs

**Cost:** Free

**Format:** Web page

<http://www.rsc.org/Education/Teachers/Resources/Books/Misconceptions.asp>

## Christmas Lectures 2012: The Modern Alchemist

Video and handout covering elements of the structure of elements and compounds, and notes covering periodic table and reactions.

**Supports:** LO1

**Cost:** Free

**Format:** Video

<http://richannel.org/christmas-lectures/2012/peter-wothers>

## Chemical Bonds: Covalent vs. Ionic

A presentation on ionic and covalent bonds – identifying one from the other.

**Supports:** LO1

**Cost:** Free

**Format:** Video

<http://www.youtube.com/watch?v=7DjsD7Hcd9U>

## Atomic Orbitals

A useful guide with hyperlinks to other useful terms.

**Supports:** LO1

**Cost:** Free

**Format:** Web page

<http://www.chemguide.co.uk/atoms/properties/atomorbs.html#top>

## Alloys

A good introduction to the chemistry of alloys.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

<http://chemistry.tutorvista.com/inorganic-chemistry/alloys.html>

## Titanium Alloys in Medical Applications

Provides an overview of some applications of alloys in medicine, with links to articles on the development of new materials.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

<http://www.azom.com/article.aspx?ArticleID=1794>

## Shape Memory Alloys – Medical Applications

Provides an overview of use of shape memory alloys in medicine.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

<http://www.azom.com/article.aspx?ArticleID=134>

## Applications of Shape Memory Alloys in the medical field

Comprehensive website on materials with an extensive resource centre.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

<http://www.totalmateria.com/page.aspx?ID=CheckArticle&LN=EN&site=ktn&NM=212>

## Colloids

A concise introduction to colloids.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

[http://chemwiki.ucdavis.edu/Physical\\_Chemistry/Physical\\_Properties\\_of\\_Matter/Solutions\\_and\\_Mixtures/Colloid#Properties\\_of\\_Colloids](http://chemwiki.ucdavis.edu/Physical_Chemistry/Physical_Properties_of_Matter/Solutions_and_Mixtures/Colloid#Properties_of_Colloids)

## Chemistry of colloids

Provides a good overview of the science of colloids.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

<http://www.chm.bris.ac.uk/webprojects2002/pdavies/>

## Should I have my amalgam fillings removed?

A useful introduction to a discussion on the safety of mercury amalgams.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

<http://www.theguardian.com/lifeandstyle/2013/mar/25/should-amalgam-fillings-be-removed>

## Oxidation and Reduction

An overview of redox reactions.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

<http://chemed.chem.purdue.edu/genchem/topicreview/bp/ch9/redox.php>

## Substitution, addition, and elimination reactions

A good introduction to addition and substitution reactions.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

<http://www.physchem.co.za/OB11-che/substitution1.htm>

## The halogenation of alkanes and cycloalkanes

Includes information on substitution reactions.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

<http://www.chemguide.co.uk/organicprops/alkanes/halogenation.html>

## The polymerisation of alkenes

The synthesis of polymers from alkenes.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

<http://www.chemguide.co.uk/organicprops/alkenes/polymerisation.html>

## Polymerisation: Addition and condensation polymerisation

An outline of addition and condensation polymerisation.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

<http://www.s-cool.co.uk/a-level/chemistry/aromatic-and-plastics/revise-it/polymerisation>

## Radical chain reactions

A very good overview, but learners should be aware that some is at a higher level than required.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

[http://chemwiki.ucdavis.edu/Organic\\_Chemistry/Organic\\_Chemistry\\_With\\_a\\_Biological\\_Emphasis/Chapter\\_17:\\_Radical\\_reactions/Section\\_17.2:\\_Radical\\_chain\\_reactions](http://chemwiki.ucdavis.edu/Organic_Chemistry/Organic_Chemistry_With_a_Biological_Emphasis/Chapter_17:_Radical_reactions/Section_17.2:_Radical_chain_reactions)

## Single Displacement Reaction

An overview of displacement reactions.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

<http://amrita.olabs.co.in/?sub=73&brch=3&sim=81&cnt=1>

## Rates of reaction index

Factors affecting the rate of reaction.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

[http://www.docbrown.info/page03/3\\_31rates.htm](http://www.docbrown.info/page03/3_31rates.htm)

## Introduction to reaction rates

How to calculate the rate.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

[http://www.docbrown.info/page03/3\\_31rates1.htm](http://www.docbrown.info/page03/3_31rates1.htm)

## Rates of reaction

92 resources for rates of reaction.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

<http://www.rsc.org/learn-chemistry/resource/listing?searchtext=rate+of+reaction&eMediaType=MED00000009>

## Alchemy: Ammonia

A series of activities for learners on the manufacture of ammonia.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

<http://www.rsc.org/learn-chemistry/resource/res00000017/ammonia#!cmpid=CMP00001812>

## Alchemy: Sulfuric Acid

An introduction to sulfuric acid production.

**Supports:** LO2

**Cost:** Free

**Format:** Web page

<http://www.rsc.org/learn-chemistry/resource/res00000030/sulfuric-acid#!cmpid=CMP00001825>

## Prokaryotic and Eukaryotic Cells

Effective comparisons of the two types of cell.

**Supports:** LO3

**Cost:** Free

**Format:** Web page

<http://www.cod.edu/PEOPLE/FACULTY/FANCHER/ProkEuk.htm>

## Comparison Between Prokaryotic and Eukaryotic Cells

Effective comparisons of the two types of cell.

**Supports:** LO3

**Cost:** Free

**Format:** Web page

<http://www.life.umd.edu/classroom/bsci424/BSCI223WebSiteFiles/ProkaryoticvsEukaryotic.htm>

## Electron micrographs

A series of annotated electron micrographs from The University of Oklahoma Health Sciences Center reproduced from Strum, Judy M. (1986). A Study Atlas of Electron Micrographs. University of Maryland School of Medicine.

**Supports:** LO3

**Cost:** Free

**Format:** Web page

<http://www.ouhsc.edu/histology/Text%20Sections/Electron%20Micrographs.html>

## Life Story: The Race for the Double Helix

BBC *Horizon* film, in two parts, on Crick and Watson's discovery of the structure of DNA.

**Supports:** LO3

**Cost:** Free

**Format:** Video

[http://www.dailymotion.com/video/xitlyu\\_life-story-the-race-for-the-double-helix-1-2\\_shortfilms](http://www.dailymotion.com/video/xitlyu_life-story-the-race-for-the-double-helix-1-2_shortfilms)

[http://www.dailymotion.com/video/xitmu3\\_life-story-the-race-for-the-double-helix-2-2\\_shortfilms](http://www.dailymotion.com/video/xitmu3_life-story-the-race-for-the-double-helix-2-2_shortfilms)

## Blue Histology

A comprehensive range of images of mammalian cells and tissues.

**Supports:** LO3

**Cost:** Free

**Format:** Web page

<http://www.lab.anhb.uwa.edu.au/mb140/>

## Muscle tissues

Labelled diagrams of mammalian tissues.

**Supports:** LO3

**Cost:** Free

**Format:** Web page

[http://archive.is/http://www.botany.uwc.ac.za/sci\\_ed/grade10/mammal/muscle.htm](http://archive.is/http://www.botany.uwc.ac.za/sci_ed/grade10/mammal/muscle.htm)

## The JayDoc Histoweb

Light micrographs of mammalian tissues.

**Supports:** LO3

**Cost:** Free

**Format:** Web page

<http://www.kumc.edu/instruction/medicine/anatomy/histoweb/index.htm>

## Animal Tissues

A review of animal tissues, with links to other histology websites.

**Supports:** LO3

**Cost:** Free

**Format:** Web page

<http://brianmccauley.net/bio-6a/bio-6a-lab/animal-tissues>

## Nuffield Foundation: 31 chemistry resources

A range of experiments in organic chemistry, some with worksheets appropriate for learners in the 16–18 age group.

**Supports:** LO4

**Cost:** Free

**Format:** Web page

<http://www.rsc.org/learn-chemistry/resource/listing?searchtext=&reference=nuffpract&filter=all&fKeyword=KCN00000009&fLevel=LEV00000005&fSubject=SUB000H0000>

## Electron Sharing and Covalent Bonds

A slide show with short clear information and short animations to support the discussion of covalent bonds and organic compounds.

**Supports:** LO4

**Cost:** Free

**Format:** Web page

<http://www.chem.ox.ac.uk/vrchemistry/electronsandbonds/intro1.htm>



## Homologous series

An introduction explaining what is a homologous series and giving the formulae and structure for a range of organic compounds including alkanes, alkenes, alcohols, carboxylic acids, looking at their structures and properties.

**Supports:** LO4

**Cost:** Free

**Format:** Web page

[http://www.bbc.co.uk/schools/gcsebitesize/science/triple\\_edexcel/organic\\_chemistry/organic\\_chemistry/revision/5/](http://www.bbc.co.uk/schools/gcsebitesize/science/triple_edexcel/organic_chemistry/organic_chemistry/revision/5/)

## The Acidity of Organic Acids

An explanation of the acidity of simple organic acids, looking at the factors which affect their relative strengths.

**Supports:** LO4

**Cost:** Free

**Format:** Web page

<http://www.chemguide.co.uk/basicorg/acidbase/acids.html#top>

## The Manufacture of Alcohols

The manufacture of alcohols by the direct hydration of alkenes, concentrating mainly on the hydration of ethane to make ethanol and comparing the method to that of making ethanol by fermentation.

**Supports:** LO4

**Cost:** Free

**Format:** Web page

<http://www.chemguide.co.uk/organicprops/alcohols/manufacture.html#top>

## How to draw structural formulae for polymers

How to draw structural formulae for polymers with the example of the addition polymerisation of ethane to produce polythene.

**Supports:** LO4

**Cost:** Free

**Format:** Web page

<http://www.bbc.co.uk/bitesize/standard/chemistry/plasticsandothermaterials/plastics/revision/4/>

## Nature: messenger RNA / mRNA

mRNA is a subtype of RNA and it is the mRNA molecule that carries a portion of the DNA code to other parts of a cell for processing. The page goes on to explain the roles of messenger RNA, ribosomal RNA and the transfer RNA in protein synthesis.

**Supports:** LO4

**Cost:** Free

**Format:** Web page

<http://www.nature.com/scitable/definition/mrna-messenger-rna-160>

## Mechanism Inspector: Printable Resources

PDFs of flow charts for reactions, reaction types.

**Supports:** LO4

**Cost:** Free

**Format:** Web page

[http://www.rsc.org/learn-chemistry/resources/mechanism-inspector/printable\\_resources.html](http://www.rsc.org/learn-chemistry/resources/mechanism-inspector/printable_resources.html)

## Essential Organic Chemistry, Global Edition

A comprehensive introduction to the subject covering compounds, reactions and biochemical organic chemistry including areas such as proteins, amino acids, peptides.

**Supports:** LO4

**Cost:** £54.99

**Format:** Book

[http://www.amazon.co.uk/Essential-Organic-Chemistry-Global-Yurkanis/dp/1292089032/ref=sr\\_1\\_4?ie=UTF8&qid=1440709016&sr=8-4&keywords=basic+organic+chemistry](http://www.amazon.co.uk/Essential-Organic-Chemistry-Global-Yurkanis/dp/1292089032/ref=sr_1_4?ie=UTF8&qid=1440709016&sr=8-4&keywords=basic+organic+chemistry)

## Build an Atom

A simple but elegant simulation allowing learners to create atoms from the constituent parts.

**Supports:** LO4

**Cost:** Free

**Format:** Web page

[http://www.rsc.org/learn-chemistry/resources/phet/build-an-atom\\_en.html](http://www.rsc.org/learn-chemistry/resources/phet/build-an-atom_en.html)

## Organic Chemistry (1/3) – Alkanes, Alkenes & Alkynes

A clear explanation of alkanes, alkenes and alkynes.

**Supports:** LO4

**Cost:** Free

**Format:** Video

[http://www.youtube.com/watch?v=Z495\\_i16b8g](http://www.youtube.com/watch?v=Z495_i16b8g)

## Carbohydrates

A clear explanation of carbohydrates, from simple monomers to polymers; their uses in biological systems are also considered.

**Supports:** LO4

**Cost:** Free

**Format:** Web page

<http://www.rsc.org/Education/Teachers/Resources/cfb/carbohydrates.htm>

## Microscale Chemistry – Properties of stereoisomers

A simple experiment on how isomers of a particular compound differ.

**Supports:** LO4

**Cost:** Free

**Format:** Web page

<http://www.rsc.org/learn-chemistry/resource/res00000544/properties-of-stereoisomers>

## In search of more solutions: Three isomeric alcohols

Notes, handouts and experiment guidance.

**Supports:** LO4

**Cost:** Free

**Format:** Web page

<http://www.rsc.org/learn-chemistry/resource/res00000588/three-isomeric-alcohols>

## Inorganic Chemistry For Dummies

A straightforward guide to inorganic chemistry for those with little or no previous knowledge, including ideas for experiments which can be carried out by learners.

**Supports:** LO5

**Cost:** Kindle £11.99, Paperback £15.99

**Format:** Book

[http://eu.wiley.com/WileyCDA/Section/id-WILEYEUROPE2\\_SEARCH\\_RESULT.html?query=inorganic%20chemistry%20for%20dummies](http://eu.wiley.com/WileyCDA/Section/id-WILEYEUROPE2_SEARCH_RESULT.html?query=inorganic%20chemistry%20for%20dummies)

## Bioinorganic Chemistry – Inorganic Elements in the Chemistry of Life: An Introduction and Guide

A textbook, available as a Kindle book or in print, which gives a detailed introduction to the subject. More a reference book for students but a useful source for teachers.

**Supports:** LO5

**Cost:** Kindle £38.48, Hardback £115.00, Paperback £45.00

**Format:** Book

<http://www.amazon.co.uk/Bioinorganic-Chemistry-Inorganic-Elements-ebook/dp/B00EMB4YNW>

## Bio inorganic compounds

A set of questions testing the basic underpinning knowledge of bioinorganic compounds. The flashcards can be used online or can be downloaded.

**Supports:** LO5

**Cost:** Free (requires the creation of an account)

**Format:** Web page

<http://quizlet.com/13805183/bio-inorganic-compounds-flash-cards/>

## Bioinorganic Chemistry – An Inorganic Perspective of Life

Provides overviews and an illustration of elements of bioinorganic chemistry.

**Supports:** LO5

**Cost:** Free

**Format:** Web page

<http://www.adichemistry.com/inorganic/bioinorganic/bioinorganic-chemistry.html>

## Writing Ionic Equations For Redox Reactions

Discussion of redox reactions.

**Supports:** LO5

**Cost:** Free

**Format:** Web page

<http://www.chemguide.co.uk/inorganic/redox/equations.html>

## Photosynthesis

An explanation of photosynthesis.

**Supports:** LO5

**Cost:** Free

**Format:** Web page

<http://www.rsc.org/Education/Teachers/Resources/cfb/Photosynthesis.htm>

## Metal Alloys

A very straightforward introduction to metal alloys, it is really written for the lay person and so is an excellent starting point for learners trying to understand the different types of alloy and how they change the characteristics of the original metal element e.g. iron (element) and steel (alloy).

**Supports:** LO5

**Cost:** Free

**Format:** Web page

<http://metals.about.com/od/specification1/a/Metal-Alloys.htm>

## General Material Classifications

An explanation of the general classification of materials.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

<http://www.nde-ed.org/EducationResources/CommunityCollege/Materials/Introduction/classifications.htm>

## Atomic Bonding

An introduction to atomic bonding, including metallic, ionic and covalent bonding.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

<http://www.nde-ed.org/EducationResources/CommunityCollege/Materials/Structure/bonds.htm>

## Bonding Basics

An introduction to atomic bonding, including metallic, ionic and covalent bonding.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

[http://www.chem4kids.com/files/atom\\_bonds.html](http://www.chem4kids.com/files/atom_bonds.html)

## Metallic Structures

An explanation of the crystal structures of metals. Also explains how the crystal structure affects the properties of a material.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

<http://www.chemguide.co.uk/atoms/structures/metals.html>

## Polymerisation

BP resources for teachers. An introduction to polymers and polymerisation.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

<http://bpes.bp.com/secondary-resources/science/ages-14-to-16/chemical-and-material-behaviour/polymerisation/>

## Nuffield Foundation: Polymers and Polymerisation

A series of experiments from Nuffield relating to polymerisation. Can be used to make a range of polymers in the classroom.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

<http://www.rsc.org/learn-chemistry/resource/listing?searchtext=polymers+and+polymerisation&fcategory=all&filter=all&reference=nuffpract&Keyword=KCN00000009#>

## What is plastic? Types and categories of plastics

An explanation of the different types of plastics (e.g. thermoplastics). Includes a wide range of other teaching resources.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

<http://www.plasticseurope.org/what-is-plastic/types-of-plastics-11148.aspx>

## Properties of materials

A basic introduction to some of the mechanical properties of materials.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

<http://www.technologystudent.com/joints/matprop1.htm>

## Engineering: Materials properties

A series of revision articles looking at the properties of engineering materials.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

<http://www.the-warren.org/avcemenu.htm>

## Malleability and Ductility

A video showing malleability of hot metals. YouTube contains further videos illustrating material properties such as ductility, brittleness, endurance and hardness.

**Supports:** LO6

**Cost:** Free

**Format:** Video

<https://www.youtube.com/watch?v=c382ziUpbbc>

## Ductility of metals

A short video showing ductile materials.

**Supports:** LO6

**Cost:** Free

**Format:** Video

<http://www.youtube.com/watch?v=OkuDM3hYutI>

## Stress & Strain

A basic introduction to stress and strain – including stress/strain graphs and formulae.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

<http://physicsnet.co.uk/a-level-physics-as-a2/materials/stress-strain/>

## Forces and elasticity: Hooke's Law

Basic introduction to Hooke's law.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

[http://www.bbc.co.uk/schools/gcsebitesize/science/add\\_aqa/forces/forceselasticityrev2.shtml](http://www.bbc.co.uk/schools/gcsebitesize/science/add_aqa/forces/forceselasticityrev2.shtml)

## Young's modulus and Hooke's Law

A video explaining the relationship between stress and strain, and also Young's modulus and Hooke's law.

**Supports:** LO6

**Cost:** Free

**Format:** Video

<http://www.youtube.com/watch?v=KxxTf7kUTM>

## Tensile Test

A video explaining how the properties of materials are determined through testing. The video shows automatic tensile testing of sample materials, including the production of force-extension graphs (termed force-elongation graphs in the video). It explains the characteristics that can be identified from the graph.

**Supports:** LO6

**Cost:** Free

**Format:** Video

<http://www.youtube.com/watch?v=D8U4G5kpcpM>

## Trends in melting and boiling points in Period 3

A good introduction to boiling and melting points – including definitions.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

<http://www.creative-chemistry.org.uk/alevel/module1/trends8.htm>

## Patterns in the periodic table: Melting points and boiling points

An explanation of how the position of elements in the periodic table reflect their boiling and melting point.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

<http://www.bbc.co.uk/bitesize/higher/chemistry/energy/patterns/revision/1/>

## Melting and boiling points: common materials

A table showing the boiling and melting points for common elements and materials.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

[http://www.engineeringtoolbox.com/melting-boiling-temperatures-d\\_390.html](http://www.engineeringtoolbox.com/melting-boiling-temperatures-d_390.html)

## Separating mixtures using sublimation | Matter | Physics

A short video explaining and demonstrating the process of sublimation.

**Supports:** LO6

**Cost:** Free

**Format:** Video

<http://www.youtube.com/watch?v=6YYrcHLckMw>

## Static Electricity – Lesson 1 – Basic Terminology and Concepts: Conductors and Insulators

A tutorial explaining charge flow in conductors, insulators and semiconductors. Includes practice questions with solutions.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

<http://www.physicsclassroom.com/class/estatics/Lesson-1/Conductors-and-Insulators>

## Conventional Versus Electron Flow

An article discussing conventional and electron flow in electric circuits. Also discusses circuits containing lamps and diodes. Has links to further articles considering voltage, current and resistance.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

[http://www.allaboutcircuits.com/vol\\_1/chpt\\_1/7.html](http://www.allaboutcircuits.com/vol_1/chpt_1/7.html)

## Drift velocity

Explanation of drift velocity and current flow – including formulae.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

<http://resources.schoolscience.co.uk/CDA/16plus/copelech2pg3.html>

## Current Electricity – Lesson 1 – Electric Potential Difference

Explanation with diagrams of potential difference. Links to other web pages explaining potential and charge (coulombs).

**Supports:** LO6

**Cost:** Free

**Format:** Web page

<http://www.physicsclassroom.com/class/circuits/Lesson-1/Electric-Potential-Difference>

## How Voltage, Current, and Resistance Relate: Chapter 2 – Ohm’s Law

Series of web pages looking at the relationship between voltage, current and resistance. Includes worked examples and worksheets. Includes power calculations.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

[http://www.allaboutcircuits.com/vol\\_1/chpt\\_2/1.html](http://www.allaboutcircuits.com/vol_1/chpt_2/1.html)

## Resistance and resistivity

An explanation with calculations of the relationship between resistance and resistivity.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

<http://resources.schoolscience.co.uk/CDA/16plus/copelech2pg1.html>

## Energy and Voltage: e.m.f. and internal resistance

An explanation of how a cell has internal resistance.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

[http://www.bbc.co.uk/bitesize/higher/physics/elect/energy\\_volts/revision/3/](http://www.bbc.co.uk/bitesize/higher/physics/elect/energy_volts/revision/3/)

## Internal Resistance of a Cell

A video showing how to calculate and determine the internal resistance of a cell by taking measurements.

**Supports:** LO6

**Cost:** Free

**Format:** Video

<https://www.youtube.com/watch?v=y-DsyncGszlo>

## Resistors in Series and Parallel

Explanation of how to calculate total resistance for circuits containing series and parallel resistors.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

[http://www.electronics-tutorials.ws/resistor/res\\_5.html](http://www.electronics-tutorials.ws/resistor/res_5.html)

## Kirchhoff’s Circuit Law

A good introduction to Kirchhoff’s first and second laws.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

[http://www.electronics-tutorials.ws/dccircuits/dcp\\_4.html](http://www.electronics-tutorials.ws/dccircuits/dcp_4.html)

## Current Electricity – Lesson 2 – Electric Current: Power: Putting Charges to Work

Series of linked articles explaining (with worked examples) the relationship of energy with power. Includes example problems for learners to calculate.

**Supports:** LO6

**Cost:** Free

**Format:** Web page

<http://www.physicsclassroom.com/Class/circuits/u9l2d.cfm>



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[www.ocr.org.uk/i-want-to/find-resources/](http://www.ocr.org.uk/i-want-to/find-resources/)

Cambridge Technicals Level 3

## Applied Science textbook

Developed in partnership with Hodder Education this book covers a range of units within this qualification. <http://www.hoddereducation.co.uk/Product/9781471874826.aspx>

Publication date: 25 Nov 2016



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