

NEWPORT GIRLS' HIGH SCHOOL

KS4 Curriculum Overview

Curriculum Intent & Organisation

The AQA Chemistry course studied by students at NGHS give both breadth and depth with sufficient exposure to the practical skills, mathematical skills and scientific knowledge to equip them as they become to become fully fledged citizens of the 21st century. Students are NOT setted in this subject. The intended outcomes are to prepare as many pupils for the demands of A level chemistry as possible whilst also helping others to be scientifically literate members of a modern society.

Examination Information

Students are working toward the AQA GCSE in Chemistry (Syllabus 8462). In year 11 Students will take the two examination papers of 1 hour and 45 minutes, including two types of questions:
Closed – multiple-choice, link boxes, sentence completion, labelling diagrams. Though practical work is not examined there are eight internally assessed pieces of practical which may be used as the basis for questions on the two written paper.

EBACC?

Yes

P8 Bucket

EBACC

Impact of Prior Learning from KS3

Students should have a good basic understanding of the particulate nature of matter, elements, compounds and the periodic table. They should understand the principles that lead to our understanding of bonding. They will also understand the some of the impact science and technology has on the planet, both in terms of the problems caused and possible solutions. They should be good and safe practical chemists able to express their findings fluently using correct scientific terminology.

Equipment Required for this course

- Standard classroom stationery
- Mathematical calculator

Curriculum Implementation – Areas of Focus Year 9

Autumn Term

- Chemical Change: Reactions of Acids, Redox
- Energy changes; Energy level diagrams and profiles; measuring energy changes

Spring Term

- Rates of reaction: factors affecting rates, measuring rates of reaction
- Introduction to organic chemistry: Crude oil and hydrocarbons; fractional distillation; uses of crude oil fractions; cracking; alkenes and their reactions

Summer Term

- Quantitative chemistry: Relative atomic and formula masses; the mole; moles and equations; equations with mass and volumes of gases.
- %mass; %yield; atom economy and its application to green chemistry.

Curriculum Implementation – Areas of Focus Year 10

Autumn Term

- Atoms, Elements, Compounds and Mixtures
- The Periodic Table: History, Groups I, VII and 0; Transition Metals
- Bonding and Structure: ionic, covalent and metallic; allotropes of carbon; states of matter; nanoparticles

Spring Term

- Quantitative Chemistry II: Moles with solids, liquids and gases; concentration and titrations; atom economy, yield; industrial applications
- Chemical Change: Acids; Metals; Reactivity and Redox; Electrolysis

Summer Term

- Energy Changes: Energy transfer in reactions; Reaction profiles; Cells and Batteries; Fuel Cells
- Rates: Measuring, graphing and experimenting
- Equilibria: Reversible reactions; Le Chatelier's principle

Curriculum Implementation – Areas of Focus Year 11

Autumn Term	Spring Term	Summer Term
<ul style="list-style-type: none"> Organic chemistry: review of alkanes and alkenes; further reactions of alkenes and addition polymerisation; alcohols and carboxylic acids; condensation and naturally occurring polymers. Chemical analysis: purity and formulations; chromatographic techniques; tests for common gases, anions and cations; instrumental techniques 	<ul style="list-style-type: none"> The atmosphere: its evolution; green house gases and climate change; carbon footprints and air pollution. Resources: metals, alloys and corrosion; resources, sustainability, recycling and life cycle assessment; water treatment; the Haber process and fertilisers. 	<ul style="list-style-type: none"> Examination Practice GCSE Examination

Impact / Outcomes

Learning will be assessed throughout the course by:

- Homework – including past question papers, research assignments
- Assessed and non-assessed practical write-ups with follow up questions
- End of unit tests involving past paper style questions typically with 30-35 marks.
- Occasional spot tests typically 10 minute tests in class.
- Ongoing lesson assessment for learning as part of teaching
- Random checking of note taking

Homework

Homework will include past paper questions, exercises from the text book, practical write-ups, research assignments, revision, rote learning of some basic information and self-reflection on assessments. Worksheets may also be used to consolidate or complete learning from class.

Ways to support learning

- Recommended to purchase an additional textbook such as Oxford University Press ISBN 978-0-19-835938-8. Revision guides and workbooks are also available from the same publisher.
- Suggested websites include BBC bitesize and tutorials on channels such as Youtube
- Revision guides and workbooks are also recommended to help with ongoing exam preparation.
- Use of online sources including:
 - www.freesciencelessons.co.uk – excellent revision videos
 - www.physicsandmathstutor.com – also does chemistry revision
 - www.chemsheets.co.uk – needs a subscription but good revision resources
- Podcasts to inspire wider interest:
 - www.thenakedscientists.com – a range of podcasts aimed at school aged students hosted by real academics
 - www.scientificamerican.com/podcasts - extension material includes a daily '60 second Science', weekly 'Science Talk' and podcasts focused on more specialist areas.

Field Work / Extension / Enrichment Opportunities

- Science Live! – Birmingham (Year 11)
- Work is sometimes taken beyond the limits of the specification in order to provide greater depth of knowledge and understanding of the material.
- Extension tasks are provided within the course which: generate greater interest in the subject; help prepare students for A-level;

Subject: Chemistry

Teachers: JW/CT

Exam Board: AQA

Next Steps

The course provides a sound base for the AQA A-level Chemistry course studied at NGHS. It covers the key areas within physical, inorganic and organic chemistry as well as giving a good basis for the assessed practical work that will be required in years 12 and 13.

For more information, contact Mr Wade or Mr Tolley