

# A-Level Chemistry

## AQA 2018/2019

### **Student Handbook 2018/19**

#### **AS Level Only:**

**Paper 1 – AS topics and required practical work.**

**Paper 2 – AS topics and required practical work.**

#### **Full A Level Only:**

**Paper 1 – AS topics and required practical work.**

**Paper 2 – A2 topics and required practical work.**

**Paper 3 – Practical techniques and data analysis, testing across the specification and multiple choice.**

Student Name:  
Teachers Name:

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‘It has become part of the accepted wisdom to say that the twentieth century was the century of physics and the twenty-first century will be the century of biology.’ Freeman Dyson

# Science – Code of Conduct

## Code of Conduct

The aim of this contract is to inform you of the sort of behaviour that the Science Department requires from you while you are studying with us. It will help you to understand the high standards of behaviour and attitude towards learning that we have come to expect from our students.

Whilst undertaking the study of Biology I \_\_\_\_\_ agree to the following ~

- To be on time for all lessons.
- To come to class fully prepared (i.e. to bring a pen, folder, paper and any required text books).
- To ensure my subject folder is kept up-to-date and tidy. (These will be checked half termly)
- Switch off all mobile phones, MP3 players and any other electronic equipment before I arrive in the classroom.
- To show respect for all members in the class and allow them to learn.
- To listen to the teacher when he/she is giving instructions.
- To listen to other students and not shout out when partaking in discussions and debates.
- To take responsibility, and not to blame others for my behaviour during lessons.
- To keep noise levels at a suitable level when learning independently.
- To complete all work set to the best of my ability.
- To meet all deadlines set for homework projects.
- To leave the classroom tidy for other students.
- To understand that all sugar based sweets and drinks are not permitted in lesson (water is acceptable)

.Signed

Print Name

Today's Date

# Introduction

First of all, welcome to AS and A Level Chemistry. This is always quite a hectic time for students & staff alike, so if you are feeling a bit lost, don't panic, Sixth Form life will settle down eventually (honest!).

Secondly, well done for selecting Chemistry as an area of study. Whatever the reasons for your choice I hope that you enjoy this course and you gain much knowledge and pleasure from it.

Chemistry is the branch of science concerned with the substances of which matter is composed, the investigation of their properties and reactions, and the use of such reactions to form new substances.

This document contains all the information that you need to know regarding your course. It contains (amongst other things) information on exam boards, syllabus areas, curriculum content, and a comprehensive reading list to support your lessons.

Please do keep this document safe, it will be a useful reference booklet in your progression through your course. If you have any questions regarding Biology, the course or Sixth Form issues in general we can be contacted during class time or via email.

Staff Member	Email
Mr S Murray	<a href="mailto:stuart.murray@open-academy.org.uk">stuart.murray@open-academy.org.uk</a>
Mrs S Steele	<a href="mailto:sarah.steele@open-academy.org.uk">sarah.steele@open-academy.org.uk</a>

# The Course



The exam board for your chemistry course this year is AQA. You can find out some more information about this in detail by visiting the AQA website.

How the course is broken down is dependent upon whether you are studying the AS level or the full A Level.

All students will be starting the AS level. We will review your progress throughout the year and together decide which is the best route for you. You may decide you would like to sit the AS exams at the end of year 1 and see how you get on. Depending on your results you might choose to continue to year 2 and set the three A Level exams at the end of this year.

We will support you in whatever choice you make. Please come and discuss this with us if you need to.

# AS level

You can sit these exams at the end of the first year of sixth form.

## AS Level Paper 1

### Paper 1

#### What's assessed

- Relevant physical chemistry topics (sections 3.1.1 to 3.1.4, 3.1.6 and 3.1.7)
- Inorganic chemistry (section 3.2.1 to 3.2.3)
- Relevant practical skills

#### Assessed

- written exam: 1 hour 30 minutes
- 80 marks
- 50% of the AS

#### Questions

65 marks of short and long answer questions

15 marks of multiple choice questions

## AS Level Paper 2

### Paper 2

#### What's assessed

- Relevant physical chemistry topics (sections 3.1.2 to 3.1.6)
- Organic chemistry (section 3.3.1 to 3.3.6)
- Relevant practical skills

#### Assessed

- written exam: 1 hour 30 minutes
- 80 marks
- 50% of the AS

#### Questions

65 marks of short and long answer questions

15 marks of multiple choice questions

## Topics for both papers:

Physical chemistry –  
Atomic structure,  
bonding and  
equilibrium

Inorganic chemistry –  
Periodicity, group 2  
and 7

Organic chemistry –  
alkanes,  
halogenoalkanes,  
alcohols, alkenes and  
organic synthesis

# A Level

You can sit these exams at the end of the second year of sixth form

## A2 Level Paper 1

### Paper 1

#### What's assessed

- Relevant physical chemistry topics (sections 3.1.1 to 3.1.4, 3.1.6 to 3.1.8 and 3.1.10 to 3.1.12)
- Inorganic chemistry (section 3.2)
- Relevant practical skills

#### Assessed

- written exam: 2 hours
- 105 marks
- 35% of A-level

#### Questions

105 marks of short and long answer questions

## A2 Level Paper 2

### Paper 2

#### What's assessed

- Relevant physical chemistry topics (sections 3.1.2 to 3.1.6 and 3.1.9)
- Organic chemistry (section 3.3)
- Relevant practical skills

#### Assessed

- written exam: 2 hours
- 105 marks
- 35% of A-level

#### Questions

105 marks of short and long answer questions

## A2 Level Paper 3

### Paper 3

#### What's assessed

- Any content
- Any practical skills

#### Assessed

- written exam: 2 hours
- 90 marks
- 30% of A-level

#### Questions

40 marks of questions on practical techniques and data analysis

20 marks of questions testing across the specification

30 marks of multiple choice questions

### Topics:

Atomic structure, amount of substances, bonding, energetics, chemical equilibria, oxidation, reduction and redox, thermodynamics, electrode potentials and acids and bases.

Periodicity, Group 2, Group 7, properties of period 3, transition metals and the reactivity of ions in aqueous solution.

### Topics:

Amount of a substance, bonding energetics, kinetics, chemical equilibria, rates equations.

Organic chemistry, alkanes, halogenoalkanes, alkenes, alcohols, organic analysis, isomerism, aldehydes and ketones, carboxylic acids, aromatics, amines, polymers, amino acids, NMR and chromatography.

### Topics:

**All topics across the specification**

# Exam Questions and Assessment Objectives

You will be required to answer a range of exam questions both in lessons and for homework.

At AS Level exam questions include multiple choice, short answer, comprehension and extended answer questions.

At A Level exam questions include multiple choice, short answer, comprehension and extended answer questions. You will also complete twelve required practicals in which you will be assessed on key competencies, skills and the use of apparatus. You will receive a Pass/Fail grading for your practical work alongside your overall A Level grade.

## **How will I be assessed? What are the skills I will need?**

You will be assessed using three key assessment objectives (AO's). These also detail the skills you will need to perfect whilst on the chemistry course.

AO1: Demonstrate knowledge and understanding of scientific ideas, processes, techniques and procedures

AO2: Apply knowledge and understanding of scientific ideas, processes, techniques and procedures: in a theoretical context, in a practical context, when handling qualitative data, when handling quantitative data

AO3: Analyse, interpret and evaluate scientific information, ideas and evidence, including in relation to issues, to: make judgements and reach conclusions, develop and refine practical design and procedures.

# How do you learn?

Studying at A level is considerably different than studying at GCSE level. There will be a lot more information and knowledge to deal with, more complex information to understand and more learning skills for you to master. Your success at A level is directly linked to the amount of Independent Learning (IL) you put into your studies.

An important step in this process not only to understanding how you learn, (ie: what type of learner you are), but also to develop good learning strategies which will support your particular learning style(s).

In your own words define Independent Learning  
(i.e. Explain what it means to you)

Can you identify three things that you have done from Yr 7 – Yr 11 that you would consider to be Independent Learning?

- 1:
- 2:
- 3:

Once you have written your definition and examples, turn over and complete the VAK questionnaire.



# VAK Learning Style(s) Self-Assessment Questionnaire

Tick the answer that most represents how you generally behave.

**(It's best to complete the questionnaire before reading the accompanying explanation.)**

1. When I operate new equipment I generally:
  - a) read the instructions first
  - b) listen to an explanation from someone who has used it before
  - c) go ahead and have a go, I can figure it out as I use it
  
2. When I need directions for travelling I usually:
  - a) look at a map
  - b) ask for spoken directions
  - c) follow my nose and maybe use a compass
  
3. When I cook a new dish, I like to:
  - a) follow a written recipe
  - b) call a friend for an explanation
  - c) follow my instincts, testing as I cook
  
4. If I am teaching someone something new, I tend to:
  - a) write instructions down for them
  - b) give them a verbal explanation
  - c) demonstrate first and then let them have a go
  
5. I tend to say:
  - a) watch how I do it
  - b) listen to me explain
  - c) you have a go
  
6. During my free time I most enjoy:
  - a) going to museums and galleries
  - b) listening to music and talking to my friends
  - c) playing sport or doing DIY

7. When I go shopping for clothes, I tend to:
  - a) imagine what they would look like on
  - b) discuss them with the shop staff
  - c) try them on and test them out
  
8. When I am choosing a holiday I usually:
  - a) read lots of brochures
  - b) listen to recommendations from friends
  - c) imagine what it would be like to be there
  
9. If I was buying a new car I would:
  - a) read reviews in newspapers and magazines
  - b) discuss what I need with my friends
  - c) test drive lots of different types
  
10. When I am learning a new skill, I am most comfortable:
  - a) watching what the teacher is doing
  - b) talking through with the teacher exactly what I'm supposed to do
  - c) giving it a try myself and work it out as I go
  
11. If I am choosing food off a menu, I tend to:
  - a) imagine what the food will look like
  - b) talk through the options in my head or with my partner
  - c) imagine what the food will taste like
  
12. When I listen to a band, I can't help:
  - a) watching the band members and other people in the audience
  - b) listening to the lyrics and the beats
  - c) moving in time with the music
  
13. When I concentrate, I most often:
  - a) focus on the words or the pictures in front of me
  - b) discuss the problem and the possible solutions in my head
  - c) move around a lot, fiddle with pens and pencils and touch things

14. I choose household furnishings because I like:
  - a) their colours and how they look
  - b) the descriptions the sales-people give me
  - c) their textures and what it feels like to touch them
  
15. My first memory is of:
  - a) looking at something
  - b) being spoken to
  - c) doing something
  
16. When I am anxious, I:
  - a) visualise the worst-case scenarios
  - b) talk over in my head what worries me most
  - c) can't sit still, fiddle and move around constantly
  
17. I feel especially connected to other people because of:
  - a) how they look
  - b) what they say to me
  - c) how they make me feel
  
18. When I have to revise for an exam, I generally:
  - a) write lots of revision notes and diagrams
  - b) talk over my notes, alone or with other people
  - c) imaging making the movement or creating the formula
  
19. If I am explaining to someone I tend to:
  - a) show them what I mean
  - b) explain to them in different ways until they understand
  - c) encourage them to try and talk them through my idea as they do it
  
20. I really love:
  - a) watching films, photography, looking at art or people watching
  - b) listening to music, the radio or talking to friends
  - c) taking part in sporting activities, eating fine foods and wines or dancing

21. Most of my free time is spent:
- a) watching television
  - b) talking to friends
  - c) doing physical activity or making things
22. When I first contact a new person, I usually:
- a) arrange a face to face meeting
  - b) talk to them on the telephone
  - c) try to get together whilst doing something else, such as an activity or a meal
23. I first notice how people:
- a) look and dress
  - b) sound and speak
  - c) stand and move
24. If I am angry, I tend to:
- a) keep replaying in my mind what it is that has upset me
  - b) raise my voice and tell people how I feel
  - c) stamp about, slam doors and physically demonstrate my anger
25. I find it easiest to remember:
- a) faces
  - b) names
  - c) things I have done
26. I think that you can tell if someone is lying if:
- a) they avoid looking at you
  - b) their voices changes
  - c) they give me funny vibes
27. When I meet an old friend:
- a) I say "it's great to see you!"
  - b) I say "it's great to hear from you!"
  - c) I give them a hug or a handshake
28. I remember things best by:
- a) writing notes or keeping printed details
  - b) saying them aloud or repeating words and key points in my head
  - c) doing and practising the activity or imagining it being done

29. If I have to complain about faulty goods, I am most comfortable:

- a) writing a letter
- b) complaining over the phone
- c) taking the item back to the store or posting it to head office

30. I tend to say:

- a) I see what you mean
- b) I hear what you are saying
- c) I know how you feel

### Now add up how many A's, B's and C's you selected

**A's**

**B's**

**C's**

If you chose mostly A's you have a VISUAL learning style.

If you chose mostly B's you have an AUDITORY learning style.

If you chose mostly C's you have a KINAESTHETIC learning style.

Some people find that their learning style may be a blend of two or three styles, in this case read about the styles that apply to you in the explanation below.

When you have identified your learning style(s), read the learning styles explanations and consider how this might help you to identify learning and development that best meets your preference(s).

Now see the VAK Learning Styles Explanation.

## VAK Learning Styles Explanation - What's my learning style?

The VAK learning styles model suggests that most people can be divided into one of three preferred styles of learning. These three styles are as follows, (and there is no right or wrong learning style):

Someone with an **Auditory** learning style has a preference for the transfer of information through listening: to the spoken word, of self or others, of sounds and noises. These people will use phrases such as 'tell me', 'let's talk it over' and will be best able to perform a new task after listening to instructions from an expert. These are the people who are happy being given spoken instructions over the telephone, and can remember all the words to songs that they hear!

Someone with a **Visual** learning style has a preference for seen or observed things, including pictures, diagrams, demonstrations, displays, hand outs, films, flip-chart, etc. These people will use phrases such as 'show me', 'let's have a look at that' and will be best able to perform a new task after reading the instructions or watching someone else do it first. These are the people who will work from lists and written directions and instructions.

Someone with a **Kinaesthetic** learning style has a preference for physical experience - touching, feeling, holding, doing, practical hands-on experiences. These people will use phrases such as 'let me try', 'how do you feel?' and will be best able to perform a new task by going ahead and trying it out, learning as they go. These are the people who like to experiment, hands-on, and never look at the instructions first!

People commonly have a main preferred learning style, but this will be part of a blend of all three. Some people have a very strong preference; other people have a more even mixture of two or less commonly, three styles.

When you know your preferred learning style(s) you understand the type of learning that best suits you. This enables you to choose the types of learning that work best for you.

There is no right or wrong learning style. The point is that there are types of learning that are right for your own preferred learning style.

# 10 Golden Rules

## How to improve my grade.

1. Start your course with an organised chemistry folder and keep it this way. You will be surprised just how important this organisation is. A level is as much about organisation as they are about hard work.
2. Produce a vocabulary book and always update this at the end of each week. Ask your teacher for definitions if you are not clear.
3. Do not just collect key words. Use them in homework and in class to make sure you understand them and can use them in the right context.
4. Make flash cards for key concepts, perspectives and research, keep them in your folder.
5. At the end of each topic spend some time making revision notes. This requires good discipline and organisation, but it will pay dividends when the course ends and you approach the final exams.
6. List evaluation points for each topic you study. Put these onto revision cards and learn them when you have completed the topic.
7. Put all your named examples for each topic onto separate revision cards. You should include what sociologists did, what they said and which perspective they follow.
8. For every theory you cover you should:
  - Make 10 bullet point statements about the perspective
  - Identify 10 key concepts the perspective would use
  - Name 3 studies related to the perspective?
  - Outline 3 criticisms of the perspective?
  - Be able to compare and contrast with other perspectives
9. For each study try and remember the theory it's related to and the method used.
10. Be able to evaluate theories by comparing and contrasting with other (often opposing) theories.



# Study Tips

## Resources

Make sure you have:

- Access to the internet, preferably on a portable device you can bring to lessons.
- Textbooks, revision guides and workbooks that match the course content.
- Revision applications for mobile devices.
- Stationery for note-taking and writing up work.

## Independent study

To access higher grades, you will need to:

- Write your lesson notes up formally and in more detail after every lesson.
- Read around the subject and go beyond the content taught in lessons.
- Have a reading list of recommended websites and books.
- Take a wider interest in the subject by subscribing to a periodical such as The New Scientist, following blogs like Wired and watching documentaries that relate to your subject.

# Study Tips

## Revision

You should:

- Draw up a revision schedule for the course.
- Revise constantly throughout the course, not just in the build up to exams.
- Prepare revision materials such as flash cards and mind maps.
- Analyse the course content to identify strengths and areas for development.
- Make a record of areas for development and talk to teachers about them.
- Attend revision sessions on alternate Wednesdays at the Open Academy.
- Subscribe to revision websites such as S-Cool or Revision World.
- Save revision materials to a phone or tablet. Spare moments that could be used for revision crop up all the time, especially if you use public transport.
- Listen to revision e-books whilst doing other tasks like washing-up.

## Past Papers

You will always benefit from:

- Accessing past papers and mark schemes online.
- Completing and marking past papers yourself.
- Completing past papers and asking a teacher to mark them.
- Recreating exam conditions (silence, no revision materials and time limits) when completing papers.
- Reading the reports on the examinations so they know what AQA are looking for in their answers.
- Analysing the reports for common exam mistakes to avoid.

# Study Tips

## Assessment

You will have an Open Academy assessment every half-term, internal mock exams around Easter and national end-of-year exams in AS and A2. Prepare for assessments by:

- Organising a calm, quiet and comfortable space for revision.
- Making sure you are well hydrated and have healthy foods to eat.
- Get enough sleep.
- Take regular breaks and avoid long, late-night revision sessions.
- Manage and prioritise their revision workload around paid jobs.

## Deadlines

You should take the following approach to deadlines:

- Make a clear record of deadlines in a diary or planner.
- Monitor homework deadlines on Sims Learning Gateway (if you do not have a login, contact the Academy). There is a link on our website.
- Start homework as soon as it is set rather than waiting until the day before.
- Always hand work in early – if there are any issues, they can be dealt with before a deadline is missed.
- Discuss any difficulties with teaching staff before the deadline passes.
- Don't fall into the trap of excuse-making. Be persistent, get the work done despite difficulties.

# Study Tips

## **Keep in contact**

Above all, talk to your teachers and parents/carers about your progress.

- Take note of feedback from your teachers and praise yourself for your successes.
- Talk to teachers and parents/carers about your difficulties and try to help find solutions.
- Talk to people about some of the things that have most interested you about the course.
- Teach other people. This is a great revision tool and we are sure your friends and family have always wanted to know about chemical analysis.
- Talk to your teachers about any issues, no matter how small or large.

# Resources

## 1) Textbooks

In class we will use hard copy of the recommended course text, as well as additional chemistry books we have in the department. If at any point you loan out a textbook, you should fill out and sign a loan agreement form. If you fail to return the book or return it in an unusable condition, you are giving your consent to replace the book or repay the cost of the book to the department.

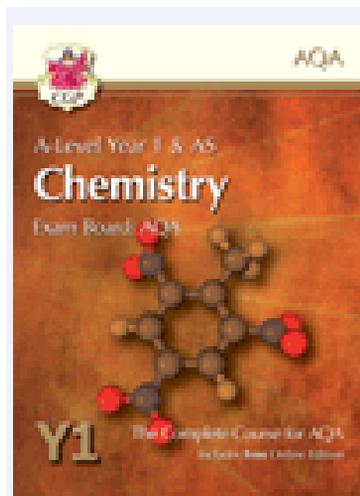
## 2) Folders

You are required to keep an organised set of notes. Due to the amount of notes and resources you will use during the year you are required to use a lever arch file and dividers to organise your studies. This should be brought to every Biology lesson you have. Once per half term we will be performing spot checks on your folders. If they are not up to standard you will receive a sanction decided upon by your teacher. The list below is a suggested order for your folder, and a guide to what should be contained within it:

- 1) Student handbook
- 2) Folder monitoring form
- 3) Checklists at the front of each topic (ask your teacher for these) Topic notes separated by dividers and notes in order.
- 4) Essays/assessments and feedback stored in a separate section along with your essay tracker.
- 5) Mentoring forms (in separate section if applicable)

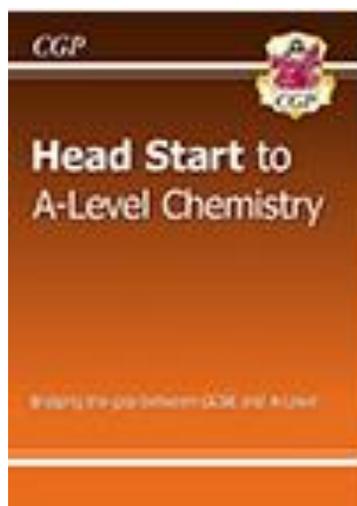
# Useful Resources

## Textbooks



### Product Details

- **Retail Price:** £19.99
- **Stock Status:** In stock
- **Subject:** Chemistry
- **Key Stage:** AS
- **Level:** A\*-E (A level)
- **Exam Board:** AQA
- **Media:** Book
- **No. Pages:** 310
- **Product Code:** CATB52
- **ISBN:** 978 1 78294 321 1



### Product Details

- **Retail Price:** £4.95
- **Stock Status:** In stock
- **Subject:** Chemistry
- **Key Stage:** Bridging to A-Level
- **Level:** A\*-E (A level)
- **Exam Board:** Generic
- **Media:** Book
- **No. Pages:** 56
- **Product Code:** CBR71
- **ISBN:** 978 1 78294 280 1

# Useful Resources

## Key website

**AQA - Download the specification, past papers and mark schemes/examiners' notes.**

**<http://www.aqa.org.uk/subjects/science/a-s-and-a-level/chemistry-7404-7405>**

## Other websites

**<http://www.rsc.org/resources-tools/>**

**<http://www.s-cool.co.uk/a-level/chemistry>**

**<http://chemguide.co.uk/>**

Notes...