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**OCR Chemistry (A)**

**A LEVEL**

**Course handbook &**

**Pre course tasks**

**2023/2024**

**Course outline with key assessment dates**

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| The specification can be accessed here (OCR Specification Chemistry A):<http://www.ocr.org.uk/Images/171720-specification-accredited-a-level-gce-chemistry-a-h432.pdf>The course is split into distinct areas with three subject specialist teachers taking responsibility for each of the following sections:  |

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**HOW THE COURSE IS DELIVERED**

Chemistry A is a content-led approach. It is divided into topics, each covering different key concepts of chemistry. The A Level Chemistry course has a strong mathematical component; approximately 40% of the course is based upon chemical calculations. The teaching of practical skills is integrated with the theoretical topics and they are assessed both through written examination papers and the Practical Endorsement. Students will complete an average 2 - 3 hours of practical work every week. They will be expected to keep accurate and up-to-date records of all practical work in their laboratory books; this must be done to a high standard if they wish to achieve the Practical Endorsement at the end of the course. The course is typically delivered by two Chemistry specialists within the Science department; teachers will usually divide up the topics according to Inorganic and Organic Chemistry.

The learning process is a blend of dynamic learning styles, including teacher-led sessions and active learning (e.g. problem solving, peer tutoring, practical work, student-led sessions, presentations, group and individual projects). These may be accompanied by field trips and visits to local industries or universities.

**Recommended books:**

The following books have been useful to students in previous years. It is NOT compulsory to buy any of these books and you in no way need all of them, these are just the ones which have been tried and tested. Students will have access to an online textbook which they should use to review work and also read ahead. The questions in the text book should be attempted as students go through the content in lessons. Pages have the specification references on and this allows students to align the content in the book with the content covered in lessons.

* OCR chemistry A year 1 and AS by Rob Ritchie and Dave Gent, published by oxford. ISBN: 978-0-19-835196-2 **(Course textbook - online version available)**
* OCR chemistry A year 2 by Rob Ritchie and Dave Gent, published by oxford. ISBN: 978-0-19-835765-0 **(course textbook - online version available**)
* Alternatively, there is a book encompassing both years available ISBN: 978-0-19-835197-9 **(online version available)**
* Revision guides including workbooks are available which run alongside these books.
* Maths skills for A Level Chemistry by Emma Poole and Dan McGown published by Nelson Thornes ISBN: 978-1-4085-2119-9 **(good if you need support with the maths in Chemistry)**
* CGP a level chemistry OCR A exam practice workbook, ISBN: 978-1-78294-922-0
* CGP a level year 1 and 2 chemistry OCR A complete revision and practice, ISBN: 978-1789080384
* CGP head start to a level chemistry, ISBN: 978-1-78294-280-1 **(transition book between GCSE and A Level)**

Please feel free to go and see or email your teachers to discuss which book would best suit your needs as we have a range of books for you to look at before you decide if you want any of the above.

**A LEVEL CHEMISTRY DEPARTMENTAL EXPECTATIONS**

* Students are expected to purchase a working file in order to record and organise any notes and worksheets used in lessons, using dividers. This should be done at the start of the course.
* Students are expected to have the correct stationery for the lessons including pens, calculators, pencils, scissors, glue and highlighters.
* Students are expected to attend all lessons.
* All lessons will involve an element of examination questions and problem solving; any work not completed in class should be finished during your study periods. This work should be self-assessed, and used by yourself to focus your revision.
* Students should bring their PLC booklets to every lesson; these will be handed out at the start of the course.
* All practical work should be written up in the **RED lab books**, not on paper. Lab books will be given at the start of the course and must be maintained to a high standard in order to achieve the Practical Endorsement.
* The orange practical booklet will be given at the start of year 12 and this should be brought to every lesson as is contains all the methods and risk assessments required to carry out the experiments. Practical sheets will not be given out during the lesson.
* MISSED LESSON CONTENT DUE TO ABSENCE – Students are expected to catch up in their designated study periods (work is shown to teacher upon arrival to the next lesson). Pupils can email teachers for power points of missed lessons.
* POOR QUALITY OF HOME STUDY – This will not be accepted and a supported study will be triggered

**HOME STUDY STRUCTURE**

**For every hour of lesson, it is expected students dedicate an hour to independent study time. Home study will be set using the following sections:**

**Gaps to close** – You act upon feedback, close the gaps in your learning e.g. writing a summary, re-answering test questions underperformed in, producing a glossary of key terms, mark scheme mnemonics, re-reading and extending lesson notes, practice testing, creating a model answer or mark scheme for areas struggling in, address PLC gaps etc.

**Revision** – Creating revision resources based upon what was taught in the lesson e.g. Mind Map, Flash Card, lists, learning key word definitions. These should be done at the end of each topic.

**Assessed Designated Study Tasks** – Teacher set tasks which will be self/peer/teacher assessed depending upon what the teacher directs. These tasks are to be completed in designated Study time and reflected upon in DIRT/ Starter Tasks once the deadline has passed. This could also include a flipped learning tasks which are outlined below.

**Exam practice and Independent Tasks** – Students will be emailed a home study booklet at the beginning of the year. This is to be saved and the exam questions completed for the current chapter being covered in lessons. There are also tasks in this booklet which the student should complete independently in order to improve vital skills in Chemistry. These tasks will often not have a definite deadline but they should be completed as the student goes through the course. Instructions on how this booklet should be completed and how work will be collected and marked are on the first page of the booklet

**Support** – Identify areas from PLCs that may need teacher/peer support or extension after strategies have been tried to grasp the content.

**Please take responsibility for making sure you ask for help if it is needed.**

**Pre-work** - flipped learning – research undertaken ready for the next lessons content or extension work

**EXAMINATION/ASSESSMENT PERIODS**

* Initial assessment within the first month to allow students the opportunity to check their suitability for the course.
* Tests and larger homework tasks are integrated during the course usually at the end of each topic; these will be used to help form predicted UCAS grades and internal progress checks.
* Internal examinations as set by the Sixth Form team (dates to be confirmed)
* PAGs will be assessed by the teacher and each student will receive feedback on these. If applicable students will also get guidance on any areas of their experimental write up that need to be developed in future.

**PRE COURSE START UP TASKS**

**Please make sure that you have prepared all four of the following tasks and bring them completed to lesson one.**

**TASK 1: Course File**

Please buy one A4 leaver arch file with file dividers (10-12 divider pack) and put your name and ‘A Level Chemistry’ on the folder. During the A Level Chemistry course you will often refer to a data booklet for some topics. Follow the link and print off the data booklet. This should be put in the front of your folder.

Link: <https://www.ocr.org.uk/Images/74947-datasheet.pdf>

**TASK 2: Balancing Equations**

Balancing chemical equations is the stepping stone to calculations in Chemistry

Watch the following link: <https://www.youtube.com/watch?v=yA3TZJ2em6g>

Now copy and balance these equations below, bring them to your first Chemistry lesson

Questions

1) Ca + O2 → CaO

2) Na2O + H2O → NaOH

3) Al + O­2 → Al2O3

4) Na + Cl2 → NaCl

5) Na2CO3 → Na2O + CO2

6) K + O2 → K2O

7) C4H8 + O2 → CO2 + H2O

8) Fe2O3 + HCl → FeCl3 + H2O

9) F­2 + KBr → KF + Br2

10) C5H12 + O2 → CO2 + H2O

**TASK 3: Ions and Ionic Formula**

Writing formula correctly is crucial to being able to write and balance equations; this is a basic skill of A Level Chemistry. Watch the following clips below

[**https://www.youtube.com/watch?v=URc75hoKGLY**](https://www.youtube.com/watch?v=URc75hoKGLY)

[**https://www.youtube.com/watch?v=p9iQ5Qn42DM**](https://www.youtube.com/watch?v=p9iQ5Qn42DM)

Now copy and write the ionic formula in symbol form, bring them to your first Chemistry lesson.

**Questions**

1) calcium bromide ………........ 11) hydrogen bromide ………........

2) aluminium fluoride ………........ 12) barium iodide ………........

3) potassium sulfide ………........ 13) zinc(II) sulfate ………........

4) magnesium nitrate ………........ 14) ammonium carbonate ………........

5) silver(I) nitrate ………........ 15) iron(III) hydroxide ………........

6) ammonium chloride ………........ 16) lithium oxide ………........

7) copper(II) carbonate ………........ 17) sodium sulfate ………........

8) iron(II) sulfate ………........ 18) calcium hydroxide ………........

9) iron(III) sulfate ………........ 19) potassium carbonate ………........

10) copper(II) oxide ………........ 20) aluminium oxide ………........

**TASK4: Calculations practice**

A large portion of Chemistry relies on being able to do some calculations. In particular the mole is a fundamental concept in Chemistry. You can find some revision notes on how to calculate moles and some of the reacting masses calculations that you have met at GCSE from the following website:

<https://www.bbc.com/education/guides/z3kg2nb/revision>

Please review the quantitative chemistry topic, specifically the calculations involving moles, concentrations and titrations. Then answer the following questions:

1. Calculate the relative formula mass of the following substances:
	1. H2SO4…………….
	2. Al2O3……………...
	3. Mg(OH)2………….
	4. (NH4)2SO4……………….
	5. CuSO4.5H2O…………….
2. Calculate the number of moles of each of the following substances:
	1. 90g of H2O
	2. 20g of C4H10
	3. 685g of NH3
3. Calculate the mass of each of the following substances:
	1. 4 moles of N2
	2. 0.4 moles of C2H5OH
	3. 0.1 moles of HNO3
	4. 0.02 moles of K2O
4. Calculate the mass of oxygen needed to react with 10g of calcium to form calcium oxide

2Ca + O2 🡪 2CaO

1. What mass of propane could burn in 48g of oxygen

C3H8 + 5O2 🡪 3CO2 + 4H2O

1. Calculate the concentration of the following solutions in mol/dm3
	1. 0.1 moles of NaCl in 200cm3
	2. 0.2 moles of H2SO4 in 100cm3
2. Calculate the number of moles of H2SO4 in 50cm3 of 0.1 mol/dm3
3. **CHALLENGE QUESTION:** 25cm3 of 0.2mol/dm3 barium hydroxide solution reacted with 22.8cm3 hydrochloric acid. Calculate the concentration of the hydrochloric acid in mol/dm3.

Ba(OH)2 + 2HCl 🡪 BaCl2 + 2H2O