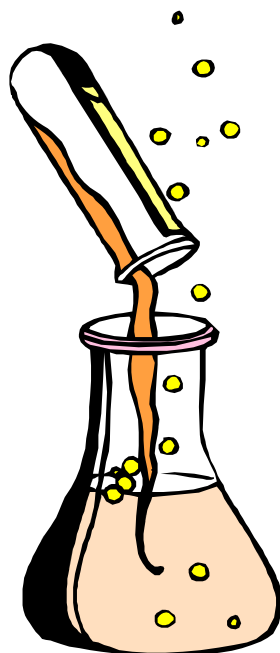
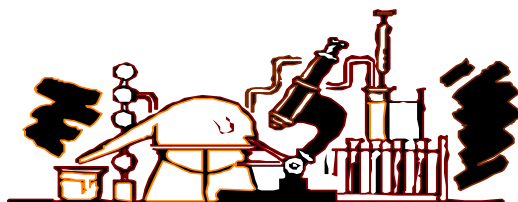


September 2010 →

LEICESTER GRAMMAR SCHOOL

CHEMISTRY DEPARTMENT



Prospective Students' Guide

FOR

A-LEVEL CHEMISTRY

N.B. This information is also available on the LGS Chemistry Department Web Site.

SIXTH FORM PROSPECTUS for CHEMISTRY - September 2009 →

Introduction

The study of Chemistry is fundamental in gaining an insight onto its importance in our lives, in industry and in society in general. Chemistry enhances our lifestyle immeasurably, it creates wealth and it directly influences trends in society. Chemistry is the study of the materials which make up our world, both living and non-living, and their properties. It offers, therefore, unlimited scope to people who want to understand and contribute to further developments in our use and conservation of the materials that surround us. A qualification in Chemistry is very highly regarded in the outside world and as well as the academic importance of the subject in its own right it is a pre-requisite for many other degree courses e.g. medicine, dentistry, veterinary science, biochemistry, chemical engineering etc.

Chemistry occupies a central position among the sciences. On the one hand it is closely linked with biology through organic chemistry and on the other is closely linked with physics through physical chemistry. It is, therefore, an important companion to the other two sciences, either individually or collectively, whilst also, of course, being a self-standing academic discipline.

Chemistry in the Sixth Form is a practically based course involving approximately 1 hour's experimental investigation per week. The practical work enables the students to investigate and therefore consolidate the many complex concepts introduced in the theory lessons. It also familiarises them with the experimental procedures and skills that are internally assessed over the two years of AS and A2 study and which contribute up to a maximum of 10% of the marks available for their final A level grade at AS and up to a maximum of 20% of the marks available for their final A level grade at A2. The course is enhanced by the use of visual aids in the form of videos and computer software, educational visits and talks by guest outside speakers at the Science Society lectures. The teaching programme of study is based upon, but not constricted by, the Edexcel AS/A2 specification and leads to the examinations set at these levels by this examination board. The format of these examinations is consistent with the philosophy of the new Key Stage 4 GCSE introduced in September 2006 with a heavy emphasis being put upon structured, data response and comprehension type questions involving "How Science Works". There is, however, one major difference at AS/A2 level in that the application of knowledge in terms of conceptual understanding and its application in the solving of novel problems takes on a much more important role allied to the obvious need for basic recall of factual information.

As of September 2000 a new dawn of post 16 education emerged in which students are now encouraged to study a broader based curriculum in the Lower Sixth Form at AS level before narrowing their programmes of study in the Upper Sixth Form at A2 level whilst in September 2008 new science specifications were introduced to carry forward and build upon the revised teaching philosophies of the new GCSE Programmes of study that were introduced for first teaching from September 2006→.

The Programme of Study for Chemistry in the Lower Sixth Form will be an AS level course involving three units of study:-

- **Unit 1 - The Core Principles of Chemistry – Unit Code 6CH01**
- **Unit 2 - Application of the Core Principles of Chemistry – Unit Code 6CH02**
- **Unit 3 - Internal Assessment of Practical Skills I – Chemistry Laboratory Skills – How Science Works – Unit Code 6CH03**

At the end of the Lower Sixth Form there will be externally set written papers on Units 1 and 2 with the marks obtained, when combined with that obtained on the practical skills assessment of Unit 3, generating an AS level grade award. This mark is not usually "cashed in" at this time as for the vast majority of the students it is merely the half way stage to their full A-level award.

In the Upper Sixth the Programme of Study for Chemistry will be an A2 level course building upon the work already done at AS level involving the study of a further three units of study :-

- **Unit 4 - General Principles of Chemistry I – Rates, Equilibria and Further Organic Chemistry – Unit Code 6CH04**
- **Unit 5 - General Principles of Chemistry II - Transition Metals and Organic Nitrogen Chemistry – Unit Code 6CH05**
- **Unit 6 - Internal Assessment of Practical Skills II - Chemistry Laboratory Skills – How Science Works – Unit Code 6CH06**

At the end of the Upper Sixth Form there will be externally set written papers on Units 4 and 5 with the marks obtained, plus that for the internally assessed laboratory skills of Unit 6, being combined with that attained at AS to generate an A2 level grade award. Each level contributes 50% of the marks towards the final A2 level grade. In January of the Upper Sixth Form retakes of Units 1 and 2 will be available for students looking to improve upon their first attempt at these Units of work. It is also probable that most students will enter for the Unit 4 A2 examination at this time.

At A2 an A* grade will be awarded to those students scoring over 90% in Units 4 and 5 on the UMS.

SPECIFICATION - EDEXCEL

COURSE TITLES

Advanced Subsidiary GCE in Chemistry – 8CH01

Advanced GCE in Chemistry – 9CH01

PROGRAMME OF STUDY - You will have 8 x 35 minute periods per week in Year 12 probably via 4 x a double period with one of these usually being devoted to practical work via units of practical work relating to the theory topics in progress at that time. In Year 13 you will have 9 x 35 minute periods per week.

SCHEME OF WORK - the course is a modular one with the topics comprising the 4 theoretical units of work being taught via an in-house teaching order and an internal assessment of practical skills - Units 3 and 6.

N.B. You will be issued with your own copy of the Edexcel syllabus in September so that you can cross reference this with your notes and organise them in the modular format required to facilitate an efficient programme of revision in the period leading up to the sitting of the external module/unit exams. The Edexcel syllabus is contained in your Sixth Form Subject Handbook "Students' Guide to A-level Chemistry" – this will be issued to all Lower Sixth chemists in September.

At the end of each topic there will be an assessment test with homework generally being set twice a week. One homework will require you to fully write up the practical work done that week and will be set immediately after the experimental work has been completed. The other homework will usually be a set of questions relating to the topic in progress.

EXAMINATION TIMETABLE

January - Term 2 = Standard Assessment Exam - Mock Unit 1 exam.

May - Term 3 = Mock Unit 2 exam...

June - Term 3 = Edexcel AS Unit 1 and Unit 2 exams.

November - Term 4 = Assessment of Upper Sixth work - Mock Unit 4 exam.

January - Term 5 = Edexcel A2 Unit 4 (and/or re-sits of AS Units 1 &/or 2 NB best re-taken in the June session)

May - Mock Unit 5 exam.

June - Term 6 = Edexcel A2 Units 4 and 5 exams. NB. There may be some synoptic elements to the Unit 5 paper. You may wish to re-take one or both AS Units to improve your overall mark.

TEXT BOOK REQUIREMENT

You need to purchase copies of the below series of Advanced Unit Chemistry text books - the first one **before** the start of the Advent Term – **please do not forget this requirement.**

Titles - Recommended

AS – Edexcel AS Chemistry Student Book by Ann Fullick & Bob McDuell Publisher Pearson Education – ISBN 978-1-4058-9635-1

A2 – Edexcel A2 Chemistry Student Book by Ann Fullick et al - Publisher – Pearson Education – ISBN 978-1-4082-0605-8

Other good alternatives include:-

AS – Edexcel AS Chemistry Student's Book by Graham Hill and Andrew Hunt – Publisher - Hodder Education ISBN 978-0-340-94908-5

A2 – Edexcel A2 Chemistry Student's Book by Graham Hill and Andrew Hunt – Publisher – Hodder Education ISBN 978-0-340-95930-5

The above books are fully endorsed by Edexcel. There are many other excellent reference text books in the library and you must be prepared to use them for the in depth research that is not always covered in the Module Booklets although such work will of course be covered in class.

You will be issued with two/three text books:-

- ◆ **Moles, Formulae and Equations** - to be used prior to embarking upon the course **i.e. over the summer vacation** - you need to be very competent in these areas and an early test will occur in September.
- ◆ **Revision - Advanced Chemistry through Diagrams.**
- ◆ **Chemistry - Facts and Practice for A-level**

CHEMISTRY IN THE SIXTH FORM

Academic Requirement - Chemistry is an intellectually demanding subject at Advanced Level and is a **big step up** from the low level demands of GCSE thus we would expect that prospective students achieve **at least a good A grade standard at GCSE in both Chemistry and Mathematics. In addition we would strongly recommend that mathematics in some form is part of your Sixth Form Programme of Study e.g. at AS level, however, for those who have performed strongly at GCSE not doing so should in no way compromise your chances of doing well at AS or indeed A2.**

The main distinction between A-level and GCSE, apart from the difficulty of the material in terms of the underlying concepts involved, is the emphasis which is placed on your own role in the learning process. As much as anything else, the A-level course is trying to prepare you for University life, both academically and in terms of the learning process. In the Sixth Form you are encouraged, indeed required, to take a large responsibility for your own learning for without this skill you will surely find success very difficult to achieve at university. You are not working just to keep the teacher happy; you are working for your own improvement and development as a student and in particular for your future. Do not think that at A-level you are simply a sponge who turns up to lessons to absorb some facts - you must be an active participant in the learning process and if this is not what you want then A-levels in general and chemistry in particular are probably not for you. Remember that as a sixth form student you should be relishing the prospect of the intellectual challenge and hard work ahead of you as you study in depth the subjects that will facilitate your future career ambitions. You should, where possible, ensure that your combination of subjects in the Sixth Form complement each other and keep your career options open.

If you elect to study chemistry in the Sixth Form then the chart below shows some of the employment areas for which you will be qualified to move onto in the future.

N.B. *this list is by no means exhaustive and further information should be obtained from the School's Careers Advisers.*

People qualified to move into the work areas listed below will be in high demand in the years to come and so not only will such people embark upon a stimulating and professionally fulfilling career, they will also find themselves well rewarded by a society increasingly in need of their skills.

You should also note that the study of Chemistry both at A-level and at degree level develops exactly the key skills so much in demand from prospective employers e.g. logical deductive thought processes and high level problem solving ability.

CHEMISTRY

Non-Scientific Sector			Scientific Sector	
Financial	Legal	Management	Medical	Non-Medical
Banking	Barrister	Research & Development	Doctor	Teacher/Lecturer
Accountancy	Solicitor	Production	Dentist	Researcher
Stock Market		Marketing	Veterinary Science	Chemical Engineer
		Sales	Pathology	Chemical Industry
		Human Resource	Forensic Science	Pharmaceutical Industry
			Medicinal Chemistry	Nanotechnology
				Biochemistry
				Biotechnology/Genetics
				Agricultural Industry
				Material Science
				ICT/Informatics

Outlined below are the tasks which you ought to be completing if you are to succeed at A-level. Remember, if you are taking A-level seriously, the work is never over - there will always be something extra still to be done.

Things that you should be doing on a weekly basis

- ◆ Writing up practical work whether told to or not! This includes the experiment, a full set of results and ensuring that all questions related to the practical have been answered and balanced equations put in where appropriate including state symbols. All practical work will be introduced for you before you start and the outcomes discussed with you at the end - pay attention and ask any relevant questions before you leave to write the work up in your practical books.
- ◆ Homework will usually take the form of an experimental write up each week and a set of questions relating to the theory work in hand. You must ensure that you meet the deadlines set except in exceptional circumstances. This is a chance to learn your chemistry and to organise yourself. Look at the homework well in advance of the deadline for handing it in so that if you need to clarify some points you can ask beforehand and therefore be able to complete the work yourself. Do not delude yourself that all is well by simply using somebody else's work to copy from - you will do yourself no favours and the error of your ways will be all too obvious in when the results of tests and exam modules are analysed.

Things you should do on a rolling basis

- ◆ Look through the notes made in class and ensure that you are happy about your understanding of any concepts involved, if not **ASK** at the earliest opportunity!
- ◆ Be prepared to use text books to expand upon the notes taken in class and copy up any missed work immediately.
- ◆ Use the syllabus supplied in your Sixth Form Handbook to check off topics as they are completed.
- ◆ Read through the relevant chapter of your text book. Consult other books too - there many in the library - no single book is the best one the entire course although the Unit specific Edexcel books are ideal in most respects. They also produce very good revision and study skills books and of course in this respect you will use questions from past papers and be able to compare your answers to the model ones supplied.
- ◆ Practice examination questions from a variety of sources to develop the techniques and "exam speak" required.
- ◆ Use the ICT suite to access the plentiful software available for chemistry and also check out the LGS Chemistry Website.
- ◆ Do ask questions in class. A levels are supposed to be a two way learning process. We assume that you have chosen chemistry because you like it and are interested in it! Lessons will be interesting and challenging if you are prepared to participate in them. Given the nature of the examination papers, which test understanding and the application of knowledge to unfamiliar examples, this business of stretching yourself beyond the confines of the syllabus will pay enormous dividends later on.

Always remember that the A-level is a two year course, with **no** time off. At the start you may be shocked by how much more challenging it is compared to GCSE - however that should be to the liking of any genuine A level student. You will be sitting public examinations at the end of the Lower Sixth year, in addition to January and June of the Upper Sixth. Predictions for UCAS are based essentially on your performance in the first Units sat for in the June of the Lower Sixth. Whatever we may predict ourselves, the results cannot be argued with. With this in mind, revision should be an ongoing activity. The volume of material covered and the rate at which it is covered is such that you cannot afford to make revision a last minute activity.

N.B. The above requirements of you are not optional they are the expected norm for any serious A-level chemistry student. If you are not prepared to do this then A-level chemistry is not for you but if you are and all goes well then A-level chemistry will be challenging, intellectually stimulating, rewarding and of course enjoyable.