Learning to believe. Learning to succeed

Subject:- Science

Head of Department: Mrs K Corroyer

Second of Department: Ms C Davis

Teachers in this department: Mrs M Farrett, Mr L Hart, Mrs L McHugh, Mr D Michael, Mr J Stoner

KS3 overview

Within Year 7-9 students will cover

During KS3 students will be studying a wide range of topics covering the 3 science specialisms from living and non-living organisms in Biology to the periodic table in Chemistry and waves in Physics. We have started on brand new schemes of work this year which we are hoping will stretch and challenge our students to be fully GCSE ready by the end of their time in year 9. Students will be assessed using a variety of different methods including a practical exam and a more traditional written exam, which feeds much better into the new GCSE specification with their new focus on practical work and the application of basic recall knowledge.

We have moved back to a 3 year KS3 this year in order to support students in Science, and we will begin the transition to GCSE level work after February half term in year 9.

Biology topics:	Chemistry topics:	Physics topics:	Science (general)
• Cells • Plants • Reproduction • Dugs and health • Living organisms	• The periodic table • Particles • Chemical reactions • Environmental chemistry	• Energy • Electricity • Magnetism • Waves • Forces • Space	• Year 7 into • Safety • Maths skills in science

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KS4 overview

In year 9 students are rigorously assessed to test their recall, understanding and application of all KS3 topics and assess their investigative skills, that have been developed since starting at DCCA. Before the end of that term 3, a formal assessment period will open to allow students to be best placed in their sets to start GCSE work and whether they will follow a Triple route (separate sciences = 3 GCSEs) of entry or a Trilogy route (double award = 2 GCSEs). During this time, we will work with the English and Maths departments to finalise these sets as there is a heavy maths and literacy focus in the new specifications.

In year 10 and 11 students are building on this knowledge, covering topics in each of the three science disciplines.

Biology topics:	Chemistry topics:	Physics topics:
• Cell biology, • Organisation • Infection and response • Bioenergetics • Homeostasis • Genetic inheritance • Ecology	• Atomic structure and the periodic table • Bonding • Quantative chemistry • Chemical change • Energy change • Rate of reaction • Organic chemistry • Chemical analysis • Chemistry of the atmosphere • Using resources	• Energy • Electricity • Particle model of matter • Atomic structure • Forces • Waves • Magnetism.

The 6 x science examinations at the end of year 11 make up 100% of the students final grades. Papers are either 115 or 145 minutes each dependent on whether students are doing double or triple science routes.

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KS4 overview - GCSEs

At GCSE students are expected to be aware of a set of required practicals that have been carried out in class and could be assessed further in the examination.

Biology	Chemistry	Physics
1 Microscopy	1 Making Salts	1 Specific heat capacity
2 Osmosis	2 Electrolysis	2 Resistance
3 Food tests	3 Temperature change	3 IV Characteristics
4 Enzymes	4 Rate of reaction	4 Density
5 Photosynthesis	5 Chromatography	5 Force and extension
6 Reaction rates	6 Rate of reaction	6 Acceleration
7 Field investigations	7	7 Waves
		8 Radiation

Please use the links below to further explore these practicals:

http://filestore.aqa.org.uk/resources/science/AQA-8464-8465-PRACTICALS-HB.PDF

For other revision resources:

https:///sites.google.com/view/scienceteacher-GCSE Science revision website

https://kahoot.com/- Kahoot revision

http://app.gojimo.co/product/945a58eb-bc96-4242-89e8-2fa555978fa8-Gojimo science revision quizes

https://www.youtube.com/channel/UCqbOeHaAUXw9Il7sBVG3_bw - FreeScienceLessons channel on YouTube

https://www.youtube.com/channel/UCGqabAVv0SRD_SjtodhQPTQ - myGCSEscience channel on YouTube (good for Physics revision)

https://www.youtube.com/watch?v=OpBgGWMB5B4 – a good video for the physics equations they need to learn

https://www.youtube.com/watch?v=wyRy8kowyM8 – Crash course for kids You tube series (an example)

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Post-16 Science

Year 12/13 BTEC Level 3

In Year 12 students will begin their BTEC Level 3 qualification in Applied Science which covers 4 main topics: Principles and applications of science (exam unit), Science investigation skills (exam unit), Practical techniques (coursework) and then an optional unit that is based on the student and teacher's preferences which is 100% coursework based

Within this the students will be required to work theory and practical procedures

Unit	Type
Unit 1: Principles and Applications of Science I	• Written examination set and marked by Pearson. • 1.5 hours. • 90 marks.
Unit 3: Science Investigation Skills	• A task set and marked by Pearson and completed under supervised conditions. • The supervised assessment is arranged over two sessions in a three-week period timetabled by Pearson. • The supervised assessment sessions are 3 hours for Part A and 1.5 hours for Part B. • Practical investigation and written submission. • 60 marks.

Pearson BTEC Level 3 National Extended Certificate in Applied Science				
Unit number	**Unit title**	**GLH**	**Type**	**How assessed**
	Mandatory units – learners complete and achieve all units			
1	Principles and Applications of Science I	90	**Mandatory**	External
2	Practical Scientific Procedures and Techniques	90	**Mandatory**	Internal
3	Science Investigation Skills	120	**Mandatory Synoptic**	External
	Optional units – learners complete 1 unit			
8	Physiology of Human Body Systems	60	**Optional**	Internal
9	Human Regulation and Reproduction	60	**Optional**	Internal
10	Biological Molecules and Metabolic Pathways	60	**Optional**	Internal
11	Genetics and Genetic Engineering	60	**Optional**	Internal
12	Diseases and Infections	60	**Optional**	Internal
13	Applications of Inorganic Chemistry	60	**Optional**	Internal
14	Applications of Organic Chemistry	60	**Optional**	Internal
15	Electrical Circuits and their Application	60	**Optional**	Internal
16	Astronomy and Space Science	60	**Optional**	Internal

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Post-16 Science

Year 12/13 International Baccalaureate in Biology -Higher level/Standard level

In Year 12 students will begin their IB Biology course, which covers Cells, Molecules, Genetics, Ecology, Evolution and Human Physiology. Most able students will further this depth by studying additional units including: Metabolism, Animal physiology, Human nutrition, Higher level plant biology and higher level genetics.

Within this the students will be required to work investigations and exploration producing a group 4 project that is a collaboration with another school and an independent research project worth 33% of the course

Year 12/13 International Baccalaureate in Environmental Systems and Societies-Standard level

In Year 12 students will begin their IB ESS course, which covers: Foundations of environmental systems and societies, Ecosystems and ecology, Biodiversity and conservation, Water and aquatic food production systems and societies, Soil systems and terrestrial food production systems and societies, Atmospheric systems and societies, Climate change and energy production and Human systems and resource use

Within this the students will be required to work on theory based tasks and practical investigations, including field work.