



# Chelmsford County High School for Girls

## Biology Department

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Biology is an enormous subject that offers a diverse range of topics to study from the molecular level to whole organisms and ecosystems. The study of Biology at CCHS enables students to gain a broad understanding of key Biological principles and also equip them with a toolkit of skills that allows them to successfully understand the science they encounter in day to day life. There is a focus on developing clear understanding of Biology and Science in general and also in developing their skills of analysis and evaluation. It also develops your ability to comprehend and communicate your ideas orally and in writing and enables you to translate information to and from prose, graphs, numerical data, and diagrams.

### Key Stage 3 Science

Biology is divided into a number of topics which span Years 7 to 9. The emphasis is on scientific enquiry, such as scientific evidence and investigative skills, as well as biological knowledge, skills and understanding.

### Year 7

Students in Year 7 will be taught Science by one (or in some cases two) members of staff. Through the Year they will study units in Biology, Chemistry and Physics. Roughly equal lengths of time will be spent studying each discipline over the year.

Many of the skills required to study Biology, Chemistry or Physics are common to all three subjects and so at the start of the year students will study an Introduction to completing investigations.

The Topics that the students will study in Year 7 will be:

Biology	Physics	Chemistry
Cells, tissues and organs Reproduction Ecology	Sound Light Forces	Particles 1 Materials 1 - separating substances Chemical reactions 1

### Year 8

Students in Year 8 continue their study of Science as three separate subjects from now onwards and will have three teachers: one each for Biology, Chemistry and Physics. They will have two Biology lessons per fortnight.

The Topics that the students will study in Year 8 will be:

- Human Body Systems (Muscles and skeleton, breathing, respiration, health and fitness microbes and respiration)
- All about plants (Photosynthesis, plant structures, carbon cycling, decomposition)
- Variation (including selective breeding)



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### Year 9

Year 9 Biology includes the completion of the study of Key Stage 3 Science and the start of studying GCSE Biology topics.

Students will be given the opportunity to develop their investigative science skills and start preparing themselves for completing controlled assessment in Years 10 and 11. The study of GCSE topics will begin in the 2nd half of the spring term in Year 9.

The Topics that the students will study in Year 9 will be:

#### Year 9 Key Stage 3 Content

- Microbiology and disease

#### Year 9 GCSE Biology Content

- Classification, and ecology including Adaptation and Competition
- Cell structure microscopy and transport across membranes

### Key Stage 4 GCSE Biology

Students will study the AQA Biology Specification in Years 10 and 11. The specification provides the basis for a wide range of studies which include cell structure, transport, homeostasis, evolution and human physiology.

The emphasis is very much on the students acquiring a sound factual base which can be applied to new situations, as well as learning to employ the correct biological terminology. The development of a sound understanding of How Science Works will also be essential to success in the GCSE Sciences. Practical work will be integrated into the teaching of the content of the course and indeed some of the practical tasks carried out are required by the examination board.

The content of the course and practical skills will be assessed through written examinations at the end of Year 11.

More information can be obtained from [www.aqa.org.uk](http://www.aqa.org.uk).

### Sixth Form Studies

A level Biology from the OCR Biology A specification) is taught at CCHS.

The study of Biology in the sixth form is a good preparation for nearly every career because it teaches you to think clearly and analytically and can help with understanding scientific issues in the wider world, particularly the advances in genetics, medicine and in tissue engineering.

At sixth form level, Biology is very different from GCSE; the increased study time means we can discuss topics in much more detail which makes the subject more interesting but also more demanding due to the huge amount of content in Biology.

We have specialised Sixth Form equipment so that experiments can be more detailed.

### A level Biology

At A-level students study the OCR Biology A specification. Students taking A level Biology are encouraged to:



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- develop a thorough understanding of the Biology they are studying and an interest in the subject that goes beyond the curriculum.
- appreciate how society makes decisions about scientific issues and how the sciences contribute to the success of the economy and society;
- develop and demonstrate a deeper appreciation of the skills, knowledge and understanding of *How Science Works*;
- develop knowledge and understanding of different areas of Biology and how they relate to each other.

The course is a linear in nature and contains content designed to be taught in Year 12 that then builds to support the content taught in Year 13. The only external assessment of the course will come at the end of Year 13 where pupils will sit 3 written examinations that will cover both the theoretical content of the course and also the practical skills they will have developed throughout their 2 years of study. The first 2 written papers tests content and application as well as practical skills. The third paper is a synoptic paper that will bring together many areas of Biology and test the students' ability to apply knowledge to new and unseen scenarios (this will contribute 26% of the final grade).

The course is composed of 6 modules with a prescribed practical component which is called the practical endorsement. There is no traditional internally assessed coursework within the course; however, practical skills can and will be assessed within the written papers and make up to 15% of the marks available in the final examinations.

The practical endorsement is awarded in addition to the A level grade and is rated as pass or not classified.

The list below shows an outline of the content of the course. For more information access [www.ocr.org.uk](http://www.ocr.org.uk)

Module	Key content
1: Development of practical skills in biology	1.1 Practical skills assessed in a written examination (15%) 1.2 <i>Practical skills assessed in the practical endorsement</i>
2: Foundations in Biology	2.1.1 Cell structure 2.1.2 Biological molecules 2.1.3 Nucleotides and nucleic acids 2.1.4 Enzymes 2.1.5 Biological membranes 2.1.6 Cell division, cell diversity and cellular organisation
3: Exchange and transport	3.1.1 Exchange surfaces 3.1.2 Transport in animals 3.1.3 Transport in plants
4: Biodiversity, evolution and disease	4.1.1 Communicable diseases, disease prevention and the immune system 4.2.1 Biodiversity 4.2.2 Classification and evolution
5: Communication, homeostasis and energy	5.1.1 Communication and homeostasis 5.1.2 Excretion as an example of homeostatic control



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	5.1.3 Neuronal communication 5.1.4 Hormonal communication 5.1.5 Plant and animal responses 5.2.1 Photosynthesis 5.2.2 Respiration
6: Genetics, evolution and ecosystems	6.1.1 Cellular control 6.1.2 Patterns of inheritance 6.1.3 Manipulating genomes 6.2.1 Cloning and biotechnology 6.3.1 Ecosystems 6.3.2 Populations and sustainability.

## Extra Curricular Biology

The Biology department offers a number of extra curricular activities including:

- Year 8 Field trip to Fingringhoe Wick (ecology studies).
- Biochemistry Society (run by sixth form prefects).
- Year 10 Science Enrichment day (Scrap heap challenge).
- Year 13 Field trip to Flatford Mill (ecological studies).
- Biology Olympiad (year 12/13)
- Biology Challenge (year 10)
- CCHS Lecture series.