Biology Transition Book
Summer 2017

Student Name:
School:
This booklet has been prepared by Science staff for you to read. The idea being that this will help you be sure that you get off to the best possible start in this subject. It is very important that you read this booklet carefully over the summer. You must seriously attempt to complete the work and submit it at the start of the year to your subject teacher in the very first lesson. This will be the first real indicator of how seriously you are prepared to be in your A’ Level studies.

A-Level Biology

This subject is taught at:
Tile Hill Wood
Westwood

The key staff on each site are:

Mrs Jo Woods – Head of Science, Tile Hill Wood School
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Course Details

Course Title: A-level Biology
Exam board: OCR
Exam Code: AS – HO20   A2 – H420

Exam Board web site: http://www.ocr.org.uk/

Assessment method: Biology A level is assessed by 4 units of examinations. A practical endorsement qualification can be achieved if students demonstrate competence using and applying a range of biological techniques during the two year course.

Minimum requirement: Standard entry requirements of five A*-C grades including English language and mathematics (Grade B) and to have studied Higher Level science at GCSE level. You may have studied Triple Science (biology, chemistry, physics) and achieved at least Grade B or alternatively, you may have studied Core Science + Additional Science (at least 2 science GCSE’s) and achieved at least Grade B.

Please note:
Biology is a practical subject which is taught using a variety of methods including laboratory-based work, analytical skills, and sometimes requires students to get their hands dirty! We do dissections and field-based studies, as well as trips to Coventry and Warwick University. Students will be expected to take a full and active part in all aspects of the course.
**About the A Level Biology course**

Biology is a popular academic course that is often linked with studying other sciences but equally is popular with students who want to continue with one science, and these often choose biology. As a subject it combines well with Humanities subjects, Arts and Sports-based A level studies, as well as with students who choose to study Health and Social Care.

Biology is a wide-ranging discipline and to do well in biology. You need to be literate, numerate and articulate. In addition you need to be committed to spending as much time outside of the classroom working on your biology as you spend in the actual class. You have to put in a lot of work in Biology but if you do it is so much more enjoyable as you will achieve more in the end.

**AS Biology:**

**Module 1: Development of practical skills in biology**

The development of practical skills is a fundamental and integral aspect of the study of any scientific subject. These skills not only enhance learners’ understanding of the subject but also serve as a suitable preparation for the demands of studying biology at a higher level. Practical skills are embedded throughout all the content of this specification. Learners will be required to develop a range of practical skills throughout their course in preparation for the written examinations.

**Module 2: Foundations in biology**

All living organisms have similarities in cellular structure, biochemistry and function. An understanding of these similarities is fundamental to the study of the subject. This module gives learners the opportunity to use microscopy to study the cell structure of a variety of organisms. Biologically important molecules such as carbohydrates, proteins, water and nucleic acids are studied with respect to their structure and function. The structure and mode of action of enzymes in catalysing biochemical reactions is studied. Membranes form barriers within, and at the surface of, cells. This module also considers the way in which the structure of membranes relates to the different methods by which molecules enter and leave cells and organelles.

**Module 3: Exchange and transport**

In this module, learners study the structure and function of gas exchange and transport systems in a range of animals and in terrestrial plants. The significance of surface area to volume ratio in determining the need for ventilation, gas exchange and transport systems in multicellular organisms is emphasised. The examples of terrestrial green plants and a range of animal phyla are used to illustrate the principle.

**Module 4: Biodiversity, evolution and disease**

In this module the learners study the biodiversity of organisms; how they are classified and the ways in which biodiversity can be measured. It serves as an introduction to ecology, emphasising practical techniques and an appreciation of the need to maintain biodiversity. The learners also gain an understanding of the variety of organisms that are pathogenic and the way in which plants and animals have evolved defences to deal with disease. The impact of the evolution of pathogens on the treatment of disease is also considered. The relationships between organisms are studied, considering variation, evolution and phylogeny.
**A2 Biology:**

**Module 5: Communication, homeostasis and energy**

It is important that organisms, both plants and animals are able to respond to stimuli. This is achieved by communication within the body, which may be chemical and/or electrical. Both systems are covered in detail in this module. Communication is also fundamental to homeostasis with control of temperature, blood sugar and blood water potential being studied as examples. In this module, the biochemical pathways of photosynthesis and respiration are considered, with an emphasis on the formation and use of ATP as the source of energy for biochemical processes and synthesis of biological molecules.

**Module 6: Genetics, evolution and ecosystems**

This module covers the role of genes in regulating and controlling cell function and development. Heredity and the mechanisms of evolution and speciation. Some of the practical techniques used to manipulate DNA such as sequencing and amplification are considered and their therapeutic medical use. The use of microorganisms in biotechnology is also covered. Both of these have associated ethical considerations and it is important that learners develop a balanced understanding of such issues.

**Career Pathways**

Biology provides you with opportunities to develop the skills required to study sciences at a higher level. The subject is wide-ranging, goes from cellular to global biology and incorporates analytical and evaluative skills that are much sought after in industry and employment. Students who have studied Biology in the past have followed a wide range of pathways including university, training schemes, and employment. Students having studies Biology can pursue pure academic Biology and other Science-related studies. However, many go on to study more applied subjects or apply the skills from Biology, in a diversity of situations.

Past students have gone on to study biological sciences, applied biology, medical sciences, environmental sciences, volcanology, forensics, holistic healing, sports-related courses, play rugby for England, psychology, education, analytical biochemistry, pharmacy, pharmacology, biomedical sciences, medicine, dance and performance arts to name but a few. We have contact with previous students who have not only followed biology to degree or Masters Level, but continued to study for PhD.

**What equipment will be needed for the subject?**

- An A4 ring binder.
- Dividers
- Lined paper
- Highlighter pens
- Pens, pencils, ruler
A calculator
Please complete the following assignments over summer ready to hand in on the very first lesson in this subject:

**Activity 1 – Classification of Organisms.**

You need to research the 5 Kingdoms and produce a Poster or Presentation to outline the characteristic features of each of the Kingdoms.

These are:  
Prokaryotae, Protoctista, Fungi, Plantae, Animalia

You should include examples from each kingdom and be able to identify which kingdom an organism belong to, based on these characteristics.

**Activity 2: Identification of Kingdoms**  
Below are pictures of organisms. Based on your research in Activity 1, you should be able to identify and name which Kingdom the organism belongs to.
**TASK:** Put the name of the kingdom the organism belongs to in the corresponding numbered box below.

**Bonus Marks:** if you name the organism as well!

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**Reading List**

You will be issued with the core course textbook. In addition, the following may be useful in supporting your independent learning.

Books, newspapers and magazines

A **good quality newspaper** (Particularly the science section) such as; The Guardian, The Times, The Telegraph, The Independent or the I for a more concise read.

Recommended Television shows/videos to watch
Discovery channel
National Geographic channel
Countryfile
Horizon
Autumnwatch/Springwatch
Secret life of....(cats, dogs or anything else biological)
David Attenborough
Secrets of Science series

Useful websites
[www.ocr.org.uk](http://www.ocr.org.uk)
[www.bbc.co.uk/science](http://www.bbc.co.uk/science)
[www.guardian.co.uk/science](http://www.guardian.co.uk/science)
[www.getrevising.co.uk](http://www.getrevising.co.uk)
‘Seen in the light of evolution, biology is, perhaps, intellectually the most satisfying and inspiring science. Without that light it becomes a pile of sundry facts -- some of them interesting or curious but making no meaningful picture as a whole.’

Theodosius Dobzhansky (1972) "Nothing in Biology Makes Sense Except in the Light of Evolution"