



NORWICH SCHOOL

**Year 11 Introduction to A Level
Practical Skills in Biology**

Join these classes <https://www.khanacademy.org/join/34E2ZXRA>

<https://app.senecalearning.com/dashboard/join-class/d6uadk84lh>

Within these a number of courses are set up for you to follow. Tests can be set and monitor your progress. Follow the order in the table below.

A copy of the specification can be found here: <https://www.ocr.org.uk/qualifications/as-and-a-level/biology-a-h020-h420-from-2015/>

Use the specification to see the detail you need for each topic in the table

Download the CGP book *Head Start to A Level Biology* on Amazon, the Kindle edition is free at the moment.

You may also wish to choose a couple of books from the reading list to read during this period.

| Trinity Term: | Topic | Aims | Online resources | Spec code |
|---|---|--|---|---------------------|
| Week 1 w/c 20th April | Standard form, accuracy and precision, unit conversions | To be able to carry out the maths to listed here | https://www.khanacademy.org/math/pre-algebra/pre-algebra-arith-prop/pre-algebra-place-value/v/place-value-2 | M0.2 M1.11 |
| Week 2 w/c 27th April | Cell Structure | To understand the structure and function of plant and animal cells to include additional organelles – rough and smooth endoplasmic reticulum, golgi body, vesicles, lysosomes. | http://vcell.ndsu.nodak.edu/animations/flythrough/closer.htm https://www.ibiblio.org/virtualcell/ https://www.khanacademy.org/science/high-school-biology/hs-cells/hs-eukaryotic-cell-structures/v/organelles-in-eukaryotic-cells https://www.khanacademy.org/science/high-school-biology/hs-cells#hs-plant-vs-animal-cells | 2.1.1 g,h,l,j,k, |
| Week 3 w/c 4th May | Microscopy, magnification and measuring cells | To understand the different types of microscope used in Biology. SEM, TEM, Laser confocal and light. | https://www.khanacademy.org/science/high-school-biology/hs-cells/hs-introduction-to-cells/a/microscopy | 2.1.1 a,b,c,e,f |

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| Week 4 w/c 11th May | Biological Membranes | To understand the structure and movement across the cell membrane | https://www.khanacademy.org/science/high-school-biology/hs-cells/hs-the-cell-membrane/v/fluid-mosaic-model-of-cell-membranes | 2.1.1 g |
| Week 5 w/c 18th May | Half-term assessment | Complete the unit test | https://www.khanacademy.org/science/high-school-biology/hs-cells/test/hs-cells-unit-test?modal=1 | |
| Half Term Holiday | | | | |
| Week 6 w/c 1st June | Biological Molecules: Water | Understand the properties of water and why H bonds are fundamental to these and the properties control life on Earth | https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-water-and-life/v/hydrogen-bonding-in-water | 2.1.2 a,b |
| Week 7 w/c 8th June | Biological Molecules: Carbohydrates | Understand the structure of the 3 monosaccharides and the disaccharides they can form. Understand how glycosidic bonds form and the | https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-biological-macromolecules/v/introduction-to-carbohydrates?modal=1 | 2.1.2 c,d,e,f,g |

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|--|-----------------------------------|--|---|------------------|
| | | differences between amylopectin, amylose and glycogen | | |
| Week 8 w/c 15th June | Biological Molecules: Lipids | Understand that lipids are made up of fatty acids and glycerol and these are held together by ester bonds. Understand how ester bonds are formed | https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-biological-macromolecules/v/introduction-to-lipids?modal=1 | 2.1.2 h,i |
| Week 9 w/c 22nd June | Biological Molecules: Proteins | Understand there are 20 different amino acids and that the sequence of amino acids dictates the structure and function of the protein. Understand how peptide bonds are formed and the 4 different protein structures and how they are held in shape | https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-biological-macromolecules/v/introduction-to-proteins-and-amino-acids?modal=1 | 2.1.2 k,l,m,n |

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|---|------------------------|--------------------------------|--|--|
| | | with a range of internal bonds | | |
| Week 10 w/c 29th June | End of term assessment | | | |

A Suggested Reading List for A Level Biologists

Magazines, Newspapers and journals

New Scientist

Scientific American

Nature

Science

Biological Sciences Review

British Medical Journal

Any scientific articles in newspapers (eg the Guardian on Wednesday)

Websites

- <http://www.ibiblio.org/virtualcell/index.htm> – An interactive cell biology site
- <http://www.accessexcellence.org/RC/VL/GG> – A web site showing illustrations of many processes of biotechnology
- <http://www.uq.oz.au/nanoworld> – Visit the world of electron-microscopy
- <http://www.dnai.org/a/index.html> – Explore the genetic code
- <http://nobelprize.org> – Details of the history of the best scientific discoveries
- <http://nature.com> – The site of the scientific journal
- <http://royalsociety.org> – Podcasts, news and interviews with scientists about recent scientific developments
- <http://www.nhm.ac.uk> – The London Natural History Museum's website with lots of interesting educational material
- <http://www.bmj.com> – The website of the British Medical Journal
- http://www.bbc.co.uk/news/science_and_environment - The BBC news page for Science and the Environment

Books

Research these on Amazon and select a few to read:

Richard Dawkins:

The Selfish Gene

The Blind Watchmaker.

Unweaving the Rainbow
Climbing Mount Improbable
The Ancestor's Tale

Steve Jones:

Y: The Descent of Men

[In the Blood: God, Genes and Destiny](#)

[Almost Like a Whale: The 'Origin of Species' Updated](#)

The Language of the genes

Matt Ridley

[Genome: The Autobiography of a Species in 23 Chapters](#)

[The Red Queen: Sex and the Evolution of Human Nature](#)

The Language of Genes

Francis Crick: Discoverer of the Genetic Code

Nature Via Nurture: Genes, Experience and What Makes Us Human

James Watson:

DNA: The Secret of Life

The Double Helix: Personal Account of the Discovery of the Structure of DNA

Lewis Thomas:

The Lives of a Cell: Notes of a Biology Watcher.

The Medusa and the Snail: More Notes of a Biology Watcher Barry Gibb: The Rough Guide to the Brain (Rough Guides Reference Titles)

Charles Darwin: The origin of species

Armand Marie Leroi: Mutants: On the Form, Varieties and Errors of the Human Body

David S. Goodsell: The Machinery of Life

Ernst Mayr: This Is Biology: The Science of the Living World

George C. Williams: Plan and Purpose in Nature

Steve Pinker: The Language Instinct

Edward O Wilson: The Diversity of Life

Primo Levi: The Periodic Table

Richard Leaky: The Origin of Humankind

Bill Bryson: A Short History of Nearly Everything