



Year 9 Biology Learning Journey Map

YEAR 10

SS Biology

CS Biology

Y9 Science assessment

Uses of glucose p.57

Rate of photosynthesis and RP6 p.58-60

Photosynthesis p.57

Bioenergetics Working Scientifically

- Investigations into the effect of exercise on the body.
- HT Only Use data to relate limiting factors to the cost effectiveness of adding heat, light or carbon dioxide to greenhouses.
- Tests to identify starch, glucose and proteins using simple qualitative reagents.

Bioenergetics Maths Skills

- measure and calculate rates of photosynthesis
- extract and interpret graphs of photosynthesis rate involving one limiting factor
- plot and draw appropriate graphs selecting appropriate scale for axes
- translate information between graphical and numeric form.
- understand and use inverse proportion – the inverse square law and light intensity in the context of photosynthesis

Bioenergetics

Anaerobic respiration and metabolism p.61-62

Aerobic Respiration p.62

Coronary heart disease p.37-38

Blood and blood vessels p.35

Exercise and response to exercise p.63

The heart p.34

Enzymes and RP5 p.28-30

Food Tests RP4 p.32

Human digestive system p.31

Plant organ systems p.42

Organ Systems

Organ Systems Working Scientifically:

- Observation and drawing of a transverse section of leaf.
- Measure the rate of transpiration by the uptake of water.
- Investigate the distribution of stomata and guard cells.
- Students should be able to use other models to explain enzyme action.
- Observing and drawing blood cells seen under a microscope.
- Evaluate risks related to use of blood products
- Evaluate methods of treatment bearing in mind the benefits and risks associated with the treatment.

Organ Systems Maths Skills:

- Process data from investigations involving stomata and transpiration rates to find arithmetic means, understand the principles of sampling and calculate surface areas and volumes.
- Students should be able to:
 - translate information between graphical and numerical form
 - plot and draw appropriate graphs, selecting appropriate scales for axes
 - extract and interpret information from graphs, charts and tables.
- Students should be able to develop an understanding of size and scale in relation to cells, tissues, organs and systems.
- Students should be able to carry out rate calculations for chemical reactions.
- Students should be able to use simple compound measures such as rate and carry out rate calculations for blood flow.

Osmosis and RP3 p.23

Active Transport p.22

Plant tissues p.42

Diffusion p.20

Specialised cells p.14

Cell structures p.11

YEAR 8

Microscopy and RP1 p.

Cells

Cells Working Scientifically:

- Recognise, draw and interpret images of cells.
- Students should be able to:
 - understand how microscopy techniques have developed over time
 - explain how electron microscopy has increased understanding of sub-cellular structures.
- Recognise, draw and interpret diagrams that model diffusion
- Use of isotonic drinks and high energy drinks in sport.
- Recognise, draw and interpret diagrams that model osmosis.

Cells Maths Skills:

- Use prefixes centi, milli, micro and nano.
- Students should be able to demonstrate an understanding of the scale and size of cells and be able to make order of magnitude calculations
- Students should be able to carry out calculations involving magnification, real size and image size using the formula: magnification = size of image / size of real object. Students should be able to express answers in standard form if appropriate.
- Students should be able to calculate and compare surface area to volume ratios.
- Students should be able to:
 - use simple compound measures of rate of water uptake
 - use percentages
 - calculate percentage gain and loss of mass of plant tissue
- Students should be able to plot, draw and interpret appropriate graphs.