TAUNTON SCHOOL

Year 9 Syllabus in a nutshell

BIOLOGY

Year 9 Syllabus in a nutshell – Biology

You do not need to learn results from experiments, but you must be familiar with apparatus, methods, skills required, and how to present the data appropriately (ie. able format and graph type).

Cell Structure
Name the main organelles of plant and animal cells (eukaryotic cells)
Name the main structures of bacterial cells (prokaryotic cells)
Explain how the main sub-cellular structures, including the nucleus, cell membranes, mitochondria, cell wall and chloroplasts in plant cells and plasmids in bacterial cells are related to their functions
Describe the difference in how the genetic material is found within eukaryotic and prokaryotic cells.
Explain how the structure of different types of cell relate to their function in a tissue, an organ or organ system, or the whole organism. Including sperm cells, nerve cells and muscle cells in animals and root hair cells, xylem and phloem cells in plants.
Name the main parts of a light microscope and explain their functions
Describe the differences in magnification and resolution between electron and light microscopes
Be able to use and rearrange the formula Image = Actual x Magnification
Be able to use appropriate drawing techniques to represent a cell
Principles of organisation
Define a cell, tissue, organ and organism
Be able to discuss the digestive system (and the function of the organs) as an example of an organ system
Animal tissues, organs and organ systems
Describe the structure function and optimum conditions for enzymes..
Define denaturation
Recall the sites of production and the action of amylase, proteases and lipases
Know that digestive enzymes convert food into small soluble molecules that can be absorbed into the bloodstream
State that the products of digestion are used to build new carbohydrates, lipids and proteins.
Some glucose is used in respiration.
Recall where bile is made and stored and its pH and function
State conditions that increase the rate of fat breakdown by lipase.
Health Issues
State that health is the state of physical and mental wellbeing.
Know that severe physical ill health can lead to depression and other mental illness.
Explain the effect of lifestyle on some non-communicable diseases and that they can be caused by and their increased by the interaction of a number of factors
Recall that benign tumours and malignant tumours result from uncontrolled cell division. Malignant tumour cells are cancers.
Know lifestyle risk factors for various types of cancer including smoking, obesity, common viruses and UV exposure. There are also genetic risk factors for some cancers.
State that health is the state of physical and mental wellbeing.
Know that severe physical ill health can lead to depression and other mental illness.
Explain the effect of lifestyle on some non-communicable diseases and that they can be caused by and their increased by the interaction of a number of factors
Recall that benign tumours and malignant tumours result from uncontrolled cell division. Malignant tumour cells are cancers.

Know lifestyle risk factors for various types of cancer including smoking, obesity, common viruses and UV exposure. There are also genetic risk factors for some cancers.
Scientific skills
Be able to construct appropriate graphs (line, bar)
Calculate mean, mode, median, range
Convert units of measurement eg. cm to mm
Interpret data on graphs
Use standard form
Calculate percentages
Calculate percentage change
Required Practicals
1 – Using a light microscope: use a light microscope to observe, draw, and label a selection of plant and animal cells and include a scale magnification.
2 – Effect of antiseptics or antibiotics on bacterial growth: use agar plates and measure the zones of inhibition produced around colonies
4 – Standard food tests to identify food groups: detect sugars, starch, and proteins, using Benedict's test, iodine test, and biuret reagent
5 – Investigate the effect of pH on the rate of reaction of amylase: use a continuous sampling method to determine the time taken to completely digest a starch solution at a range of pH values