Curriculum Sequencing - Year 10

<table>
<tr><td colspan="3">Year 10: Bioenergetics 4.2. 1.</td></tr>
<tr><td>Topics covered:

• Photosynthesis
• Factors affecting Photosynthesis
• Uses of glucose from Photosynthesis
• Aerobic Respiration
• Anaerobic Respiration
• Response to exercise
• Metabolism

Required Prac: Investigate the effect of light intensity on the rate of photosynthesis.</td><td>How it links to what has been studied before:

It links cells and growth from the Cells unit (4.1.1.). It also links to the Organisation unit (4.2.1) of how energy is used in animals and plants and how the physiologies are designed to allow animal and plant bioenergetics to happen.</td><td>How it links to what will be studied:

It will link into aspects of ecology and interdependence. Knowing how and why animals and plants may grow in different areas. It will also help understand why the human responds to different activities.</td></tr>
<tr><td colspan="2">Key words:
Glucose, Metabolism, Energy, Chemical Reaction, rate, exothermic, carbon dioxide, oxygen water, glycogen, lactic acid, oxygen debt. Independent Variable, Dependent Variable, Control Variable.</td><td>Key skills:
Required practical and lab skills. Measuring, quantifying, analyzing results, drawing graphs, writing analytical comments about information.</td></tr>
<tr><td colspan="2">Assessment focus
End of unit test.
It’s an element within Mock exams P1.
Required Practical.</td><td>Revision tips:
Seneca
Keyword lists
Educake
Exam questions.</td></tr>
<tr><td colspan="3">Why we study it:

We will explore how plants harness the Sun’s energy in photosynthesis in order to make food. This process liberates oxygen which has built up over millions of years in the Earth’s atmosphere. Both animals and plants use this oxygen to oxidise food in a process called aerobic respiration which transfers the energy that the organism needs to perform its functions. Conversely, anaerobic respiration does not require oxygen to transfer energy. During vigorous exercise the human body is unable to supply the cells with sufficient oxygen and it switches to anaerobic respiration. This process will supply energy but also causes the build-up of lactic acid in muscles which causes fatigue</td></tr>
<tr><td colspan="3">Mastery in this subject
To master this subject this will need to be able to discuss what respiration and photosynthesis is and link it to how physiologies are adapted and allow these occur.</td></tr>
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Year 10 : Quantitative Chemistry

Topics covered:	How it links to what has been studied before:	How it links to what will be studied:
Conservation of Mass **Relative Formula Mass** **Balancing equations** **Mass Changes** **Chemical measurements** **Moles** **Amounts of Substances** **Limiting Reactants (Higher)** **Using Mass to balance Equations** **Concentration of Solutions.** **Triple: Yield and Atom Economy** **Triple: Using concentrations of Solutions.** **Triple: Gas Volumes**	**KS2: How we know chemical reactions occur and what signs might tell us chemical reactions have occurred.** **KS3: We study chemical reactions and conservation of mass. We look at the atomic number and the atomic mass of an element.** **KS4: This topics using ideas learnt from the atomic structure and the structure of the atom.**	

Key words:	Key skills:
Mass, Atomic Number, Atomic Mass, Particles, Atoms, Balancing, Elements, Percentage, Reactants, Products, Energy, Moles, Concentration	Investigation skills: Calculating means and percentages.
Assessment focus End of Unit test.	**Revision tips** • Educake - test yourself on areas that you have done revision on to see how well you understand the knowledge. • Flash cards/ mind maps. Remind yourself of the content and then test what you know. • RAG checklist. What do you know and don't know. • Practice exam questions, then check the answers and then improve your answers.

Why we study it:

Chemists use quantitative analysis to determine the formulae of compounds and the equations for reactions. Given this information, analysts can then use quantitative methods to determine the purity of chemical samples and to monitor the yield from chemical reactions. Chemical reactions can be classified in various ways. Identifying different types of chemical reaction allows chemists to make sense of how different chemicals react together, to establish patterns and to make predictions about the behaviour of other chemicals. Chemical equations provide a means of representing chemical reactions and are a key way for chemists to communicate chemical ideas.

Mastery in this subject:

Year 10 : Organisation A (part one of Organisation unit)

Topics covered:

- **Principles of organisation**
- **Human Digestive system**
- **Enzymes**
- **Analysis of enzyme activity**

Required practicals covers.
Food tests.
Effect of pH on enzymes.

How it links to what has been studied before:
KS2
Human Body organs
How the body works
Digestion, basic function of the organs.
Healthy Living
KS3
Nutrition, Digestion, nutritional deficiencies.

How it links to what will be studied:
Prior knowledge will be developed, to include enzymes, and factors that effect them. An understanding of why chemical breakdown of nutrition is useful.

Key words:
Nutrition, Catalyst, Enzyme, Villi, Insoluble, Bile, Absorption, Gut soluble, Epithelial Cells, Microvilli, Capillary, Surface area, Fibre, Glucose, Fat, Protein, Carbohydrate, Lipids, Amino acid, Vitamins, Minerals, Water, Active site, Denature, Substrate, Lock and Key, Molecule, Optimum, Starch, Amylase, Carbohydrase, Protease, Lipases, Pancreas, Saliva, Small intesting, Large intestine, Stomach, Liver, Oesophagus, Mouth, Bile duct,

Key skills:
Required practical and lab skills. Measuring, quantifying, analyzing results, drawing graphs, writing analytical comments about information. Applying knowledge to practical results to demonstrate understanding of bigger picture.

Assessment focus
End of Unit test.
Parts may be included within the first round of mock exams.

Revision tips

- **Educake - quiz based revision**
- **Seneca - Exam style questions**
- **Flash cards/mind maps**
- **RAG Topic checklists**
- **Practice Exam questions.**
- **Study capture - 5 mins at the end of day recapping what you covered in the lesson.**

Why we study it:

Biology is the science of living organisms. The study of biology involves collecting and interpreting information about the natural world to identify patterns and relate possible cause and effect. Biology is used to help humans improve their own lives and to understand the world around them. We study the digestion, which is also relatable to us as human beings.

Mastery in this subject

To master this subject they will be able to use data to explain why some enzymes may ot be working in certain conditions. Students will be able to explain what food is broken down into and what food test to use to show this.