| Learning Plan 1 | Subject/Pwnc: Science – Double Award (Biology) | Year/Blwyddyn: 10 |
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***The Four Purposes in Science and Technology:***

**Ambitious, capable learners, who:**
set themselves high standards; seek and enjoy challenge; are increasingly knowledgeable and skilful; ask questions; enjoy solving problems; can explain ideas and concepts; can use number effectively in different contexts; interpret data and apply mathematical concepts; use digital technologies creatively to communicate, find and analyse information; research and evaluate critically what they find.

**Enterprising, creative contributors, who:**
take measured risks.

**Ethical, informed citizens, who:**
find, evaluate and use evidence in forming views; consider the impact of their actions when making choices and acting; are committed to sustainability.

**Healthy, confident individuals, who:**
are establishing their ethical beliefs; face and overcome challenge.

**Knowledge focus/what matters:**
Being curious and searching for answers is essential to understanding and predicting phenomena.
The world around us is full of living things which depend on each other for survival.
Forces and energy provide a foundation for understanding our universe.

| Learning objective/key question | What will I know and be able to do? I can… | How will I develop my skills? (Success Criteria) | Homework/Gwaith cartref to support progress | |
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| Week 1<br>1.1Cells and movement across membranes. | • Identify organelles in animal and plant cells.<br>• Use the formula to work out image size, magnification or actual size. (image = mag X actual)<br>• Use a light microscope to view plant and animal cells (red onion/cheek). | I can answer questions using key words.<br><br>I can use light microscopes to view and draw cells.<br><br>I can recall key scientific facts and figures.<br><br>I can spell key scientific words correctly.<br><br>***Specified prac.** * | Wk 1 | Homework:<br>Exam question on animal and plant cell organelles.<br><br>Set:<br><br>Due: |
| Week 2<br>1.1 Cells and movement across membranes | • Describe what a specialised cell is and why we need them<br>• State several examples of specialised cells<br>• State the levels of organisation within organisms and define each level | I can provide responses using key terms in context.<br><br>I can observe and describe ways in which substances move across membranes.<br><br>I can reflect on my answers based on teacher feedback.<br><br>I can describe levels of organisation of organisms. | Wk 2 | Homework:<br>Exam question on osmosis and diffusion<br><br>Set:<br><br>Due: |

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| | • Describe what diffusion, active transport and osmosis are.<br>• Explain factors that affect the rate of diffusion/movement across membranes | I can predict the movement of molecules using concentration gradients. | | |
| Week 3<br>1.1 cells and movement across membranes | • Describe what an enzyme is and what job it does.<br>• Explain the lock and key theory.<br>• Identify and explain the causes for enzymes to denature.<br>• Describe what happens to enzymes to cause denaturing. | I can describe and explain the lock and key theory.<br><br>I can identify the causes of enzyme denaturing.<br><br>I can explain the effect of temperature and pH on enzyme action.<br><br>I can conduct experiments with precision.<br><br>I can process and display data appropriately.<br><br>***Specified prac. *** | Wk 3 | Homework:<br>Enzymes exam question.<br><br>Set:<br><br>Due: |
| Week 4<br>1.2 – Respiration and the respiratory system. | • Label the human respiratory system<br>• Explain the functions of the respiratory system<br>• Describe and explain how the alveoli is adapted to its function. | I can recall the structure of the respiratory system.<br><br>I can describe the adaptations of the alveoli and explain their function.<br><br>I can explain the functions of the respiratory system. | Wk 4 | Homework:<br>Exam questions relating to chemical calculations.<br><br>Set:<br><br>Due: |
| Week 5<br>1.2 – Respiration and the respiratory system. | • Describe anaerobic respiration.<br>• Describe aerobic respiration.<br>• Compare and contrast anaerobic and aerobic respiration. | I can use previous knowledge define respiration.<br><br>I can make predictions based on previous learning.<br><br>I can select the correct chemical equations.<br><br>I can combine previous learning to inform my answers to questions. | Wk 5 | Homework:<br>Reacting masses exam questions with extended reading.<br><br>Set:<br><br>Due: |

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| Week 6<br>1.2 – Respiration and the respiratory system. | • The comparison of the respiratory system to the bell jar model.<br>• Describe the pressure and volume changes that permit inspiration and expiration.<br>• Describe and explain the percentage composition of inhaled and exhaled air. | I can evaluate the effectiveness of a scientific model.<br><br>I can describe the causes and effects of the mechanism of breathing.<br><br>I can compare percentages and explain the differences. | Wk 6 | Homework:<br>Labelling the alveoli and explaining adaptations.<br><br>Set:<br><br>Due: |
| Week 7<br>1.2 - Respiration and the respiratory system. | • Describe and explain the mucus and cilia as a cleaning/protective mechanism.<br>• Explain the link between smoking and respiratory issues.<br>• Describe and explain effects of smoking on the body.<br><br>***1.1 & 1.2 End of Topic Assessment*** | I can use my knowledge and understanding to predict effects as part of my scientific exploration.<br><br>I can explore and describe the effects of smoking on the cilia and respiratory system.<br><br>I can describe the ways smoking effects the body and make links to long term conditions. | Wk 7 | Homework:<br>6 mark QER questions about cilia and smoking.<br><br>Set:<br><br>Due: |