Progression Model – Year 13 Applied Science

Module Title: Module 1	**Module Title:** Module 2	**Module Title:** Module 3
Learning Intent for this module: Students will start this module by reviewing and building on their GCSE science knowledge of enzymes and diffusion. In Unit 12, students will be developing their understanding of diseases and infections by learning about causes of disease and how to prevent the transmission of disease. Unit 3: Learning Aim D (Enzymes in action) Unit 3: Learning Aim E (Diffusion of molecules) Unit 12: Learning Aim A Unit 12: Learning Aim B	**Learning Intent for this module:** In Unit 3, students will study three scientist topics. They will begin leaning about plants, factors that affect plant growth and the importance of random sampling. Students will then move onto learning about fuels and energy. They will use this theory to investigate the combustion of fuels and release of energy. Finally, students will revisit and develop their GCSE understanding of circuits. In Unit 12, students will continue to look at disease and infections and will learn how to treat and manage diseases. Unit 3: Learning Aim F (Plants and their environment) Unit 3: Learning Aim G (Energy content of fuels) Unit 3: Learning Aim H (Circuits) Unit 12: Learning Aim C	**Learning Intent for this Module:** In this module, students will prepare for their Unit 3 external examination by completing revision on each of the Unit 3 learning aims. In Unit 12, students will complete their studies of disease and infection by learning how the human body reacts to disease and infection. Unit 3: Revision and exam preparation Unit 12: Learning Aim D
Key Content to be learned: <u>Unit 3</u> In the 'Enzymes in action' topic, students will learn about protein structure and enzymes as biological catalysts. They will develop their investigation skills by planning and carrying out experiments on the factors that affect enzymes. In the 'Diffusion of molecules' topic students will learn about kinetic theory and the movement of molecules before investigating the factors that affect diffusion.	**Key content to be learned:** <u>Unit 3</u> In the 'Plants and environment' topic, students will revisit GCSE photosynthesis and then examine factors that can affect plant growth. They will then learn about the importance of random sampling in an experiment and develop investigations around this. In the 'Energy content of fuels' topic, students will learn about fuels and combustion of fuels. They will carry out an experiment to determine the energy content of different fuels. In the 'Circuits' topic, students will	**Key Content to be learned:** <u>Unit 3</u> Students will prepare for their Unit 3 exam by reviewing and revising each of the Unit 3 Learning Aims. <u>Unit 12</u> Students will complete Unit 12 by learning how the human body responds to disease and infections. They will complete coursework on the body's immune response to disease and infection.

<u>Unit 12</u> Students will learn about the four pathogens that cause disease. They will research a communicable and non-communicable disease and develop case studies for each.	learn about components of circuits, Ohm's law, fuses, resistors and power. They will learn about how electricity bills are calculated and efficiency of different appliances. <u>Unit 12</u> In Unit 12 students will learn about the ways that diseases can be treated and managed. Students will complete a research task and coursework on this topic.	

Prior knowledge:
 	
• Cell biology
• States of matter
• Health, disease and the development of medicines
• Working scientifically
  ○ The development of scientific thinking
  ○ Analysis and evaluation
  ○ Experimental skills and strategies
  ○ Vocabulary, units, symbols and nomenclature
	Prior knowledge:
	• Photosynthesis
	• Ecosystems
	• Energy
	• Energy changes in chemistry
	• Electricity
	• Magnetism and electromagnetism
	• The structure of matter
	• Atomic structure
	• Working scientifically
	  ○ The development of scientific thinking
	  ○ Analysis and evaluation
	  ○ Experimental skills and strategies
	  ○ Vocabulary, units, symbols and nomenclature
		Prior knowledge:
		
		• Unit 3 – learning Aims A-G
		• Unit 12 – Learning Aims A, B and C
		• Cell biology
		• Health, disease and the development of medicines
		• Working scientifically
		  ○ The development of scientific thinking
		  ○ Analysis and evaluation
		  ○ Experimental skills and strategies
		  ○ Vocabulary, units, symbols and nomenclature

Key tasks for this module: • Assessed coursework (Unit 12: Learning Aim A) • Assessed coursework (Unit 12: Learning Aim B) • Formative assessment on enzymes • Formative assessment on diffusion • Mock exam (Unit 3)	**Key tasks for this module:** • Assessed coursework (Unit 12: Learning Aim C) • Formative assessment on fuels • Formative assessment on circuits • Formative assessment on plants • Mock exam (Unit 3)	**Key tasks for this module:** • Assessed coursework (Unit 12: Learning Aim D) • External examination (Unit 3)