Science Year 9 Curriculum overview

The below is intended to provide parents and pupils with a simple overview of Year 9 Science. Should you have any additional questions please do not hesitate to contact Mrs Middleton. We strongly encourage parents to look through their child's books and talk with them about their studies. It addition to the knowledge quizzes at the end of each year students will sit 4 larger assessments throughout the year after completing a biology, chemistry and physics unit.

Learning Focus	Assessments
Unit 1: Healthy lifestyles	
Learning enquiries: 1). What is health? 2). What is a balanced diet? 3). How can we determine the amount of energy in foods? 4). How does the skeleton function? 5). How do muscles help us move? 6). What are drugs? 7). How does alcohol affect the body? 8). What effects does smoking have on the body? Key skills: **Graph skills and conclusion** - investigating the force needed to move an arm	**Interim Assessment:** Pupils will receive feedback on their skills assessment with how to improve **Final Assessment:** Knowledge test to assess key component knowledge from the unit
Unit 2: Earth	
Learning enquiries: 1). What is Earth and its atmosphere like? 2). What are sedimentary rocks? 3). What are igneous and metamorphic rocks? 4). What is the rock cycle? 5). What is the carbon cycle? 6). What is climate change? 7). How are materials recycled? Key skills: **Evaluating models** - students either design their own model or evaluate an existing model	**Interim Assessment:** Pupils will receive feedback on their skills assessment with how to improve **Final Assessment:** Knowledge test to assess key component knowledge from the unit
Unit 3: Forces in action	
Learning enquiries: 1). What are turning forces? 2). How do levels reduce force? 3). What is acceleration? 4). What are velocity time graphs? 5). What is momentum? 6). How are cars designed to prevent injury? Key skills: **Interpreting graphs** - interpreting velocity time graphs and calculating gradient	**Interim Assessment:** Pupils will receive feedback on their skills assessment with how to improve **Final Assessment:** Knowledge test to assess key component knowledge from the unit
Unit 4: New technologies in biology	
Learning enquiries: 1). What is genetics? 2). What are inherited diseases? 3). What is selective breeding? 4). What is genetic engineering? 5). What is fermentation? 6). How can bacteria be useful? 7). How can enzymes be used in industry? Key skills: **Extended writing**: Comparing selective breeding, genetic engineering and cloning	**Interim Assessment:** Pupils will receive feedback on their skills assessment with how to improve **Final Assessment:** Knowledge test to assess key component knowledge from the unit
Unit 5: New technologies on chemistry	
Learning enquiries: 1) What are nanoparticles? 2) How can nanoparticles be used? 3) What are the risks of nanoparticles? 4) What are the pros and cons of cars? 5) What alternative fuels are available? 6) What are catalytic convertors? 8) What are hybrid cars?	**Interim Assessment:** Pupils will receive feedback on their skills assessment with how to improve

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Key skills: **Calculations:** energy from fuels	**Final Assessment:** Knowledge test to assess key component knowledge from the unit
Unit 6: New technologies in physics	
Learning enquiries: 1). How do mobile phones work? (waves) 2). How is physics used in your home? (efficiency, LDRs) 3). How is demand for electricity changing? 4). How is physics used in hospitals? (thermistors) 5). How can we see inside the body? (optical fibres, X-rays, scans)? 6). How is physics used in sport? (reaction times) Key skills: **Literacy –** Structuring a 6 mark question to communicate scientific ideas effectively on how physic sis used in hospitals	**Interim Assessment:** Pupils will receive feedback on their skills assessment with how to improve **Final Assessment:** Knowledge test to assess key component knowledge from the unit
Unit 7: Detection in biology	
Learning enquiries: 1). What types of microscope are there 2). What can fingerprints tell us? 3). What is DNA fingerprinting 4). What are blood groups 5). How can you determine time of death? 6). What is pathology? Key skills: **Literacy** – explaining how fingerprints can be used by the police	**Interim Assessment:** Pupils will receive feedback on their skills assessment with how to improve **Final Assessment:** Knowledge test to assess key component knowledge from the unit
Unit 8: Detection in chemistry	
Learning enquiries: 1). How can we separate blood and sand? 2) How can we identify acids and alkalis? 3).How can we identify which ink wrote the note? 4). How can we determine blood alcohol levels? (gas chromatography) 5). What causes corrosion? 6) How is scientific evidence used in court? Key skills: **Planning an investigation** – method writing including variables	**Interim Assessment:** Pupils will receive feedback on their skills assessment with how to improve **Final Assessment:** Knowledge test to assess key component knowledge from the unit
Unit 9: Detection in physics	
Learning enquiries: 1). How do telescopes work? 2). How do astronomers search for life on other planets? 3). How does GPS work? 4). How do radio waves send information? 5). How can we detect particles? Key skills: **Analysis of data**	**Interim Assessment:** Pupils will receive feedback on their skills assessment with how to improve **Final Assessment:** Knowledge test to assess key component knowledge from the unit
Unit 10: Turning points in biology	
Learning enquiries: 1) How were vaccines developed? 2) How were antibiotics developed? 3) What is antibiotic resistance? 4) How was the structure of DNA discovered? 5) What was Darwin's theory of evolution? 6) What other theories for evolution are there? 7) How can we prevent extinction?	**Interim Assessment:** Pupils will receive feedback on their skills assessment with how to improve

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Key skills: **Using evidence to support arguments**	**Final Assessment:** Knowledge test to assess key component knowledge from the unit
Unit 11: Turning points in chemistry	
Learning enquiries: 1).How did ideas about atoms change over time? 2) How is the Periodic table organised? 3) Why is the Periodic table organised this way? 4) How are fossils formed? 5) What can fossils tell us about the past? Key skills: **Sequencing ideas**	**Interim Assessment:** Pupils will receive feedback on their skills assessment with how to improve **Final Assessment:** Knowledge test to assess key component knowledge from the unit
Unit 12: Turning points in physics	
Learning enquiries: 1) How have ideas about the solar system changed? 2) What is the Big Bang theory? 3) What are satellites? 4) How did we send men to the moon? 5) How were radioactive elements discovered? 6) How can radiation be used? 7) What is electromagnetic induction? Key skills: **Communicating scientific ideas**	**Interim Assessment:** Pupils will receive feedback on their skills assessment with how to improve **Final Assessment:** Knowledge test to assess key component knowledge from the unit