Northease Manor School

	Year 11 Science 2018-19
Term	**Curriculum outline**
1	**Biology: Photosynthesis;** The rate of photosynthesis; How plants use glucose; Making the most of photosynthesis; **Respiration:** Aerobic respiration; The response to exercise; Anaerobic respiration; Metabolism and the liver. **Communicable diseases;** Health and disease; Pathogens and disease; Preventing infections; Viral diseases; Bacterial diseases; Diseases caused by fungi and protists; Human defence response. **Preventing and treating disease:** Vaccination; Antibiotics and pain killers; Discovering drugs; Developing drugs. **Non-communicable disease:** Cancer; smoking and the risk of disease; Diet, exercise and disease; Alcohol and other carcinogens. **The human nervous system;** Principles of homeostasis; The structure and function of the human nervous system. Reflex actions. **Hormonal coordination:** Principles of hormonal control; the control of blood glucose levels; Treating diabetes; The role of negative feedback; Human reproduction; Hormones and the menstrual cycle; The artificial control of fertility; Infertility treatments. **Reproduction:** Types of evolution; Cell division in sexual reproduction; DNA and the genome; Inheritance in action; More about genetics; Inherited disorders; Screening for genetic disorders.
2	**Variation and evolution:** variation; Evolution by natural selection; Selective breeding; Genetic engineering; Ethics and genetic technologies. **Genetics and evolution:** Evidence for evolution; Fossils and extinction; More about extinctions; Antibiotic resistant bacteria; Classification New systems of classification **Adaptation, interdependence and competition:** The importance of communities; Organisms in their environment; Distribution and abundance; Competition in animals; Competition in plants; Adapt to survive; Adaptations in animals; Adaptations in plants; **Organising an ecosystem:** Feeding relationships; Materials cycling; the carbon cycle; **Biodiversity and ecosystems:** The human population explosion, Land and water pollution; Air pollution; Deforestation and peat destruction; Global warming; Maintaining biodiversity**.**

3	**Chemistry: Electrolysis;** Introduction to electrolysis; Changes at the electrodes; the extraction of aluminium; Electrolysis of aqueous solutions. **Energy changes;** Exothermic and endothermic reactions; Using energy transfers from reactions; Reaction profiles; Bond energy calculations; Chemical cells and batteries; Fuel cells. **Rates and equilibrium:** Rate of reaction; Collision theory and surface area; The effect of temperature; The effect of concentration and pressure; The effect of catalysts; Energy and reversible reactions; Dynamic equilibrium; Altering conditions. **Crude oil and fuels:** Hydrocarbons; Fractional distillation; Burning hydrocarbon fuels; Cracking hydrocarbons. **Chemical analysis:** Pure substances and mixtures; Analysing chromatograms; Testing for gases; **The Earth's atmosphere:** History of our atmosphere; Our evolving atmosphere; Greenhouse gases; Global climate change; Atmospheric pollutants. **The Earth's resources:** Finite and renewable resources; water safe to drink; Treating waste water; Extracting metals from ores; Life cycle assessments; Reduce, reuse and recycle.
4	**Physics: Molecules and matter;** Density; States of matter; Changes of state; Internal energy; Specific latent heat; Gas pressure and temperature. **Radioactivity:** Atoms and radiation; the discovery of the nucleus; Changes in the nuleus; More about alpha, beta an gamma radiation; Activity and the half-life. **Forces in balance:** Vectors and scalers; Forces between objects; Resultant forces; Centre of mass; The parallelogram of forces; Resolution of forces; **Motion:** Speed and distance-time graphs; Velocity and acceleration; More about velocity-time graphs; Analysing motion graphs. **Forces and motion:** Forces and acceleration; Weight and terminal velocity; Forces and braking; Momentum; Forces and elasticity. **Waves and properties:** The nature of waves; the properties of waves; Reflection and refraction; More about waves; **Electromagnetic waves**: The electromagnetic spectrum; Light, infrared, microwaves and radio waves; Communications; Ultraviolet waves, x-rays and gamma rays; X-rays in medicine; **Electromagnetism:** Magnetic fields; Magnetic fields and electric current; The motor effect
5	**Revision** **Exams**