**Learning Intentions- Year 10 Science**

**Natural selection and evolution**

1. To investigate changes caused by natural selection in a particular population because of a selection pressure, such as artificial selection.
2. To outline processes involved in natural selection, including variation, isolation, and selection.
3. To describe biodiversity as a function of evolution
4. To evaluate and interpret evidence for evolution, including the fossil record, chemical and anatomical similarities, and geographical distribution of species.

**Genetics**

1. Describe the role of DNA as the blueprint for controlling the characteristics of organisms.
2. Explain the development of Watson and Crick double helix model of DNA
3. Use models and diagrams to represent the relationships between DNA, genes and chromosomes.
4. Explain how genetic information is passed onto offspring from both parents by meiosis and fertilisations.
5. Model patterns of inheritance of simple dominant/recessive characteristics through generations of a family.
6. Predict simple ratios of offspring genotypes and phenotypes in crosses
7. Describe mutations as changes in DNA and outline the factors that contribute to causing mutations.
8. Investigate the applications of gene technologies such as gene therapy.
9. Discuss the use of genetic testing for ethical reasons and genetic counselling.

**Motion**

1. To analyse everyday motions produced by forces, such as measurements of distance and time, speed, force, mass and acceleration.
2. To explain that a stationary or moving object with constant motion, has balanced forces acting on it.
3. To use Newton’s second law to predict how a force affects the movement.
4. To apply Newton’s third law to describe the effect of interactions between two objects.
5. To use the law of conservation of energy to explain that total energy is maintained in energy transfer and transformation.
6. To explore various forms of energy e.g. Potential, kinetic and gravitational energy.

**Periodic Table**

1. To recall that elements in the same group of the periodic table have similar properties- family groupings.
2. Investigate the chemical activity of metals
3. Describe the structure of atoms in terms of electron shells.
4. Investigate the development of the periodic table.

**Global Systems**

1. To model a cycle such as water, carbon or nitrogen within the biosphere.
2. To explain the cause and effects of the greenhouse effect.
3. To explain the factors that drive the deep ocean currents, the role in regulating global climate and the marine climate.
4. To investigate how human activity affects global systems
5. Investigate the use and control of CFCs based on scientific studies of atmosphere.
6. Investigate the effect of climate change on sea levels and biodiversity.

**Chemical Reactions**

1. To model chemical reactions in terms of the rearrangement of atoms.
2. To represent chemical reactions using words and symbols.
3. To describe the role of energy in chemical reactions.
4. To classify a range of different chemical reactions as exothermic and endothermic reactions.
5. To predict the products of different types of simple chemical reactions
6. To investigate the reactions of acids with bases, metals and carbonates.
7. To investigate a range of factors that affect rate of chemical reactions.

**Forensics**

1. To construct hypotheses based on models and theories
2. To identify alternative explanations that are consistent with the evidence.
3. To explain how advances in science can affect people’s lives.
4. To describe the role of DNA as the distinctive blueprint of humans.
5. To understand the basics of solving and handling a crime scene.
6. To understand various terminology used in forensics.
7. To understand the difficulty of faking a bank note.
8. To understand why police, take eyewitness accounts of a crime as soon as possible.