

Module P1

Scientific knowledge and understanding

- I can explain the forces of drag and friction and how we can reduce both.
- I can describe the effect of gravity on earth and in space.
- I can discuss what happens when waves superpose.
- I can describe how sound is produced, how amplitude and frequency affect loudness and pitch and how the human ear functions to hear sounds.
- I can explain how a microphone detects sounds and uses of ultrasound.
- I can describe how light travels, is refracted and how the eye works.

Mathematical skills

- I can calculate means.
- I can draw appropriate graphs and lines/curves of best fit.
- I understand units of mass and force and can calculate weight from mass and GFS.
- I can compare data on audible ranges of animals.

Implications of science today and in the future

- I know how Newton's ideas about gravity are used by scientists to predict planets.
- I know how animals' hearing ranges can determine their activity.
- I know how our ideas of the Solar System have developed over time.

Processing and methods in science

- I can plan a practical with details.
- I can carry out a practical safely, following a risk assessment.
- I can processing data and Present data appropriately.
- I can analyse data, draw conclusions and evaluate my experiment.

Module P2

Scientific knowledge and understanding

- I can explain how objects become charged and how they interact.
- I can describe the difference between series and parallel circuits.
- I can compare the energy values and food and fuels.
- I can explain what equilibrium is.
- I can explain the transfer of energy in conduction, convection and radiation.
- I can compare renewable and non-renewable energy and how electricity is generated in a power station.
- I can describe factors what affect the pressure of gases and liquids.

Mathematical skills

- I can calculate resistance from current and PD.
- I can calculate energy needed for different activities.
- I can use kWh to calculate energy used in appliances and relate this to the cost of running appliances.
- I can calculate work done, speed, pressure and moments.

Implications of science today and in the future

- I am aware of the dangers of objects becoming charged.
- I know how electromagnets are used.

Processing and methods in science

- I can plan a practical with details.
- I can carry out a practical safely, following a risk assessment.
- I can process data and can present data appropriately.
- I can analyse data, draw conclusions and evaluate my experiment.

Minimum Expected Standards

Science

Year 7 & 8

Modules are not learned in the order listed

Inside this booklet you will find a summary of all the knowledge and skills that the academy expects you to master in this subject by the end of the year.

These are the **minimum standards** that we set for all students. If you achieve this you should be on track to achieve at least a **grade 5/6 in your GCSE** in year 11.

During each half-term you will have regular **'learning checks'** to assess how well you are progressing against the expected standards. If you do not reach the expected standard in any of these checks you should be seeking help from your teacher, asking for study supports and using the materials on TGiSpace to help you improve.

If you wish to push yourself further your teacher will also be sharing with you examples of how to go **beyond the expected standards**

Tudor Grange Academy
Solihull

Module B1

Scientific knowledge and understanding

- I can describe and explain the adaptations of specialised cells. Explain how diffusion works.
- I can describe the structure of the gas exchange system and explain how to measure lung volume.
- I can describe and explain the function of the skeleton, joints and muscle groups.
- I can explain the changes that occur during puberty.
- I can describe and explain the process of reproduction in humans and plants.

Mathematical skills

- I can calculate Total magnification from microscope lens.
- I can draw appropriate graphs.
- I can state the unit of force.

Implications of science today and in the future

- I can describe the History of the Microscope and how man has benefited from it.
- I know how our understanding of fertilisation helped control pregnancy.

Processing and methods in science

- I can plan a practical with details.
- I can carry out a practical safely, following a risk assessment.
- I can process data and present data appropriately.
- I can analyse data, draw conclusions and evaluate my experiment.
- I can use the checklist for examples of questions that could be answered.

Module B2

Scientific knowledge and understanding

- I can describe the process of digestion, the structure and function of the digestive system and how enzymes are involved.
- I can describe the process of photosynthesis, the structure and function of the leaf components and how plants use minerals to stay healthy.
- I can explain the term chemosynthesis.
- I can compare aerobic and anaerobic respiration
- I can describe what food chains show, how organisms co-exist in ecosystems and how they occupy particular niches.

Mathematical skills

- I can calculate the energy requirements of different people.
- I can calculate the energy transferred between members of a food chain.
- I can represent variation within a species using graphs.

Implications of science today and in the future

- I know how unhealthy diets cause health issues and how we should educate.
- I know the role of some medicinal drugs and the affect of drugs on society.
- I understand the problem with bioaccumulation of toxic materials in the food chain.
- I understand the discovery of the structure of DNA and purpose of gene banks.

Processing and methods in science

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- I can process data and present data appropriately.
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Module C1

Scientific knowledge and understanding

- I can link the arrangement of the 3 states of matter to their different properties and explain how energy is involved in changing state.
- I can explain evaporation and boiling and use particles to explain why diffusion doesn't occur in solids.
- I can describe what a compound is and explain why chemical reactions can be useful
- I can define what exothermic and endothermic reactions are.
- I can compare the properties of acids and alkalis, describe the pH scale.

Mathematical skills

- I can draw heating curves.
- I can interpret data about melting points and boiling points.
- I can relate number of atoms in compounds to their chemical formula.
- I can relate number of atoms in compounds to their chemical formula.

Implications of science today and in the future

- I am aware how our ideas of particles has developed over time.
- I understand how melting points can be used to show purity of substances.
- I am aware of the development of the periodic table.
- I understand how we use the compound sodium chloride.
- I know how fuels have been utilised in combustion reactions

Processing and methods in science

- I can plan a practical with details.
- I can carry out a practical safely, following a risk assessment.
- I can process data and present data appropriately.
- I can analyse data, draw conclusions and evaluate my experiment.

Module C2

Scientific knowledge and understanding

- I can predict properties of group 0, 1 and 7 elements.
- I can describe the arrangement of particles in mixtures and how to identify pure substances using melting points.
- I can explain evaporation and distillation to separate substances.
- I can compare reactions of metals with dilute acids.
- I can use the reactivity series to predict displacement reactions.
- I can describe the properties of polymers and composites.
- I can explain how igneous, sedimentary and metamorphic rocks form.

Mathematical skills

- I can use graphs of melting points to identify pure substances.

Implications of science today and in the future

- I understand the impact of Mendeleev on using patterns to produce a Periodic Table.
- I can relate properties of different metals to their uses.
- I know why the properties of ceramics make them suitable for their uses.
- I can explain the impact of global warming on the planet.
- I can discuss the importance of recycling.

Processing and methods in science

- I can plan a practical with details.
- I can carry out a practical safely, following a risk assessment.
- I can process data and present data appropriately.
- I can analyse data, draw conclusions and evaluate my experiment.
- I can use the checklist for examples of questions that could be answered.