



**KS4 CURRICULUM
KNOWLEDGE AND SKILLS
SUBJECT REFERENCE GUIDE**

Year 10

Dear Parent/Carer

Please find attached the latest progress KASH report for your son/daughter. Also attached are the guides to accompany the report. The guides have been written to offer you further information regarding your child's progress here in school.

For each curriculum area, there are statements explaining the knowledge and skills being developed during this academic year. The assessment review also outlines the **end of Key Stage** target level for each subject. These are set to be aspirational and each individual target will therefore always contain a degree of challenge.

Under the teacher assessment level (TA Grade) each teacher has indicated the grade they feel your child will achieve at the end of Key Stage 4 if they continue at the same rate of progress. Each grade is split to indicate if a student is high (H), secure (S) or low (L) within this grade or level.

The Knowledge, Attitudes, Skills and Habits (KASH) review allows you to see the latest 'snapshot' of your child's progress in all four areas of KASH. Your child's development in each area has been judged by the subject teacher on a scale of 5 to 1 dependent on the progress being made when compared with curriculum expectations.

KASH Level	KASH Level Description
1	Excelling
2	Enhancing
3	Secure
4	Establishing
5	Emerging

Each member of staff will have conducted a learning conversation with your child. This conversation will have included current strengths and areas for improvement within the subject. All conversations are recorded in the student's exercise books/files. Intervention strategies will already be in place for those students who are causing concern and these will be reviewed as part of our continuing monitoring process.

It is important that all our students make the progress of which they are capable and achieve their full potential. I look forward to your continued support in helping us to meet these aims.

Yours faithfully



Mr D Brown
Head of School

GCSE ART AND DESIGN

Students will develop their **KNOWLEDGE** of:

- how to **research** effectively – the ability to explore the work of a range of artists, designers and craftspeople and draw inspiration from this.
- How to **explore** ideas using the work of artists, craftspeople and designers, (including photographers and architects) to develop and extend thinking, and to help them make informed decisions with their own work.
- how ideas, feelings and meanings can be conveyed and interpreted in images, artefacts and products
- how images, artefacts and products relate to social, historical, vocational and cultural contexts
- a variety of approaches, methods and intentions of contemporary and historical **artists, craftspeople and designers** from different cultures and their contribution to continuity and change in society.
- how to work **autonomously** within their own chosen themes, using ideas and selecting artists and techniques appropriately and suitable to their developments.
- How to be **creative!**

Students will develop their **SKILLS** in:

- **recording** experiences and ideas in appropriate forms (such as drawing, painting, mixed media, photography, textiles, 3D design and printmaking).
- **exploring** relevant resources – analysing, discussing and evaluating images, objects and products, making and recording independent judgements in visual and other forms.
- exploring potential lines of enquiry using appropriate media practices and techniques such as **drawing, ceramics, painting, printmaking, photography, textiles, 3D design, laser cutting Photoshop, Illustrator and other IT software.**
- **making** images, artefacts and products; reviewing and modifying work and planning and developing ideas in the light of their evaluations
- **Communicating ideas**, and presenting them in a range of appropriate visual, tactile and/or sensory forms including the use of new technologies
- working both as individuals and in collaboration with others in a range of situations
- **discussing** the work of relevant artists linked to their own intentions
- using correct Art terminology when annotating and evaluating their own work in relation to their intentions
- Being **creative!**

GCSE COMPUTER SCIENCE

Students will develop their **KNOWLEDGE** of:

- System architecture including the purpose of the CPU, Von Neumann architecture and embedded systems
- Different types of memory including RAM and ROM
- Different storage devices and their characteristics; including optical, magnetic and solid state
- Wired and wireless networks including the hardware needed to set one up
- Network topologies, protocols and layering
- How data needs to be converted into a binary format to be processed by a computer
- How data is input, processed and output and how it can be stored
- How to show selection in a program
- IDE's and Maintenance
- Iterations, testing and basic lists in programs
- Defensive design and validation in programs

Students will develop their **SKILLS** in:

- Planning and carrying out a practical investigation, creating efficient solutions to problems
- Selecting suitable techniques to solve all aspects of a problem
- Producing reports that effectively demonstrate an understanding of technical terminology/concepts
- Programming techniques including basic programming constructs, loops, and basic string manipulation
- How to convert positive denary whole numbers (0–255) into 8-bit binary numbers and vice versa
- How to convert from binary to hexadecimal equivalents and vice versa
- How to add binary values and perform shifts on these- including the effect these shifts have on the value
- Identifying networks used in different organisations
- How files are compressed including the difference between lossy and lossless compression

GCSE DESIGN AND TECHNOLOGY

Students will develop their knowledge of:

- new and emerging technologies, the use and generation of energy, the function and application of electrical and mechanical systems
- the categorisation of the types, properties and uses of materials such as papers and boards, timbers, polymers and textiles
- the environmental, social and economic challenges facing designers
- investigating effectively – drawing inspiration from the work of past and current designers and companies, researching existing products and identifying user needs
- designing for specific users in response to specific problems and contexts.

This Award complements the learning in other Level 2 programmes such as BTEC Tech Award in Engineering by broadening the application of design and make tasks, working with a design brief, testing and evaluation.

Students will develop their **SKILLS** in:

- using modern and traditional tools, equipment and techniques to make manufacturing decisions and carry them out independently and accurately when making a prototype or product
- applying safe working practices and communicating understanding verbally, visually and in writing
- literacy, numeracy and ICT including specific design software
- independent working; working to deadlines; efficient use of resources
- using materials and techniques independently and with precision
- specialist techniques and processes which incorporate the use of computer aided design and manufacture.

GCSE DRAMA

Students will develop their KNOWLEDGE of:

- creative expression: group work, leadership/directing, active listening, devising, collaboration, reflection and refining ideas
- verbal contribution: verbal evaluation, using drama terminology when creating or evaluating work, verbal analysis, communication of ideas
- theatrical style and genre: utilising a range of theatrical styles and techniques studied for use within devising original material
- written communication: understanding examination requirements and structure, communication of creative performance and design and ideas

Students will develop their SKILLS in:

- characterisation: movement (gesture, posture, facial expression, body language, gait, stance, dynamics, levels, proxemics, stage positioning) voice (tone, pitch, pace, pause, volume, articulation, accent), development techniques (improvisation, devising from a stimulus), character relationships and audience rapport
- utilising conventions for a purpose: still image, marking the moment, split focus, physical theatre, mime, flash-forward/back, slow motion, robotic movement, unison / choral movement and speech, thought tracking, narration, episodic structure, symbolism, climax, contrast
- oracy and communication: presence, clarity, eye contact, presentation
- written communication: grammar and punctuation, expression of creative ideas using subject specific terminology

BTEC LEVEL 1 / LEVEL 2 TECH AWARD IN ENGINEERING

The Award gives learners the opportunity to develop sector-specific knowledge and skills in a practical learning environment. The main focus is on four areas of equal importance, which cover the:

- development of key engineering practical and technical skills, such as research, observation, measurement, making, using computer-aided design (CAD) and disassembly
- knowledge of key engineering sectors (mechanical, electrical, chemical, communication, aerospace, automotive and engineering design) and the interrelation of each in industry
- knowledge of the stages involved in planning and implementing an engineering project
- knowledge and skills involved in the investigation of solutions to engineering problems in response to a given brief

This Award complements the learning in other GCSE programmes such as GCSE Design and Technology by broadening the application of design and make tasks, working with an engineering brief, testing and evaluation. Students will develop their **KNOWLEDGE** of:

- the various engineering sectors and the role of design in the production of engineered products
- engineering sectors, products and organisations, and how they interrelate
- engineering skills through the design process using drawing skills and ICT
- health and safety rules and considerations of workshop safety
- quality control and quality assurance working within tolerances
- key engineering processes used to manufacture modern products, in a range of engineering sectors
- how engineering materials and technology develops
- how engineering contributes to a sustainable future
- analysing existing products to determine their performance requirements
- a selection of specific materials and components

Students will develop their **SKILLS** in:

- using knowledge of tools, equipment and techniques to make manufacturing decisions and carry them out independently and accurately
- applying safe working practices and communicating understanding verbally and in writing
- literacy, numeracy and ICT including specific design software
- independent working; working to deadlines; efficient use of resources
- using materials and techniques independently and with precision
- planning work in stages; recording costs, materials, machinery, time limits and quality control

GCSE ENGLISH LANGUAGE

Students will develop their **KNOWLEDGE** of:

Reading -

- a range of texts to help students articulate their ideas in a sophisticated way
- the way in which language, structure, form and context are used to enable a writer to express their ideas
- the significant impact that literature has on the world

Writing -

- the methods used to write with engagement and control
- the ways in which specific audiences can be targeted through linguistic devices.

Speaking and Listening -

- the various ways in which talk and discussion can be used to articulate meaning

Students will develop their **SKILLS** in:

Reading –

- articulating informed interpretations of meanings supported by well-chosen textual reference
- analysing how writers use language and structure to convey ideas, achieve effects and influence readers using relevant subject terminology
- comparing ideas, attitudes, methods and contexts in order to evaluate effectiveness
- relating different texts to their relevant social, historical and literary context across the 19th, 20th and 21st century
- making links between texts
- accessing unseen literature independently
- evaluating texts critically and supporting this with appropriate textual references

Writing -

- communicate clearly, effectively and imaginatively
- selecting and adapting tone, style and register for different forms, purposes and audiences
- organising information and ideas, using structural and grammatical features to support coherence and cohesion of texts
- selecting appropriate words and phrases from a rich and wide vocabulary
- demonstrating control of spelling, punctuation and grammar
- utilising a variety of sentence structures with control for both meaning and effect

GCSE ENGLISH LITERATURE

Students will develop their **KNOWLEDGE** of:

Reading -

- a range of seen and unseen texts from across the 19th, 20th and 21st century to help students articulate their ideas in a sophisticated way
- the way in which language, structure, form and context are used to enable a writer to express their ideas
- the significant impact that literature has on the world
- different genres of writing and their influences

Writing -

- the methods used to write with engagement and control

Students will develop their **SKILLS** in:

Reading –

- articulating informed interpretations of meanings supported by well-chosen textual reference
- analysing how writers use methods to convey ideas, achieve effects and influence the reader or audience, including language, structure, form and dramatic devices
- comparing ideas, attitudes, methods and contexts in order to evaluate effectiveness
- making specific links between texts and their relevant social, historical and literary context across the 19th, 20th and 21st century
- comparing unseen texts
- exploring the writer's purpose, ideas and perspectives

Writing –

- demonstrating control of spelling, punctuation and grammar when articulating ideas

GCSE FOOD PREPARATION & NUTRITION

Students will develop their **KNOWLEDGE** of:

- food provenance
- major food commodities groups
- how a commodity is grown, reared and processed
- food preparation, cooking and presentation
- nutritional values (sources, functions, deficiencies, excess, daily requirements)
- dietary considerations for special groups
- food science
- food hygiene, health and safety (qa / qc)
- sensory properties of food
- the use of specialist equipment
- specialist language and culinary terms
- food storage and packaging

Students will develop their **SKILLS** in:

- accurate food preparation with the emphasis on high level skills (20 in total)
- selecting and planning practical tasks in detail
- understanding the physical function of food commodities and applying the knowledge
- evaluating practical and scientific tasks in detail
- conducting a food science experiment and writing a hypothesis
- researching a topic independently

GCSE GEOGRAPHY

Students will develop their **KNOWLEDGE** of:

- Physical landscapes in the UK: Rivers
 - UK's diverse landscapes
 - Fluvial processes and landforms
 - River flooding and management
- The changing economic world
 - Global variations in economic development and quality of life
 - Strategies to reduce the global development gap
 - Contrasting development in Nigeria and the UK
- The living world
 - Biotic and abiotic components of global ecosystems
 - Characteristics of tropical rainforests and hot deserts
 - Economic and environmental impacts of deforestation
 - Development of hot desert environments
 - Management of tropical rainforests and hot deserts
- Physical landscapes in the UK: Coasts
 - UK's diverse landscapes
 - Coastal processes and landforms
 - Coastal erosion and management

Students will develop their:

- Critical thinking and problem-solving skills
- Ability to thinking synoptically about a range of issues
- Cartographic skills
 - Atlas maps
 - Ordnance Survey maps
 - Maps in association with photographs
- Graphical skills
- Numerical skills
- Statistical skills

BTEC HEALTH AND SOCIAL CARE

Students will develop their **KNOWLEDGE** of:

- Human growth and development across different life stages
- Different physical, social and cultural and economic factors that can affect people's growth and development
- A range of expected and unexpected life events and how people deal with them
- Different types of health and social care services in the local area
- Potential barriers people may face in accessing health and social care services

Students will develop their **SKILLS** in:

- empathy
- debate and discussion
- research
- working both independently and as part of a team
- using case studies to write extended responses
- time management to work effectively towards a deadline

GCSE HISTORY

Students will develop their **KNOWLEDGE** of:

Germany, 1890–1945: Democracy and dictatorship

- Germany and the growth of democracy
- Germany and the Depression
- The experiences of Germans under the Nazis

Conflict and tension: The inter-war years, 1918-1939

- Peacemaking
- The League of Nations and international peace
- The origins and outbreak of the Second World War

Britain: Migration, empires and the people:c790 to the present day

- Conquered and conquerors
- Looking West
- Expansion and empire
- Britain in the 20th century

Elizabethan England, c1568–1603

- Elizabeth's court and Parliament
- Life in Elizabethan times
- Troubles at home and abroad
- The historic environment of Elizabethan England

Students will develop their **SKILLS** in:

- explaining and analysing historical events and periods studied using second order historical concepts including continuity, change, cause, consequence, significance, similarity and difference
- analysing, evaluating and using sources (contemporary to the period) to make substantiated judgements, in the context of historical events studied
- analysing, evaluating and making substantiated judgements about interpretations (including how and why interpretations may differ) in the context of historical events studied
- developing as independent learners and as critical and reflective thinkers
- developing the ability to ask relevant questions about the past, to investigate issues critically and to make valid historical claims by using a range of sources in their historical context
- developing an awareness of why people, events and developments have been accorded historical significance and how and why different interpretations have been constructed about them
- organising and communicate their historical knowledge and understanding in different ways and reach substantiated conclusions

GCSE MATHS

Students will develop their **KNOWLEDGE** of:

- accurately recall facts, terminology and definitions
- using and interpreting notation correctly
- accurately carry out routine procedures or set tasks requiring multi-step solutions
- making deductions, inferences and draw conclusions from mathematical information
- constructing chains of reasoning to achieve a given result
- translating problems in mathematical or non-mathematical contexts into a process or a series of mathematical processes
- making and use connections between different parts of mathematics

Students will develop their **SKILLS** in:

- interpreting and communicate information accurately
- presenting arguments and proofs
- assessing the validity of an argument and critically evaluate a given way of presenting information
- interpreting results in the context of a given problem
- evaluating methods used and results obtained
- evaluating solutions to identify how they may have been affected by assumptions made

GCSE MEDIA

Students will develop their **KNOWLEDGE** of:

- media language and media specific terminology applicable to both general areas of media as well as the media industries studied as part of their course
- media organisations and the structures within the media industry
- how audiences are defined and how various media texts target different audiences
- various genres in media and how they can be defined by generic conventions
- a range of media products

Students will develop their **SKILLS** in:

- applying media language and media specific terminology into their writing of controlled assessments and exams
- responding to a variety of media texts in an analytical way
- various digital media packages in order to edit their own practical media productions
- researching into relevant media texts (set texts and unseen) using different research methods and techniques
- using a range of digital equipment

BTEC LEVEL 1 / LEVEL 2 FIRST AWARD IN CREATIVE DIGITAL MEDIA PRODUCTION

Students will develop their **KNOWLEDGE** of:

- media language and media specific terminology applicable to both general areas of media as well as the media industries studied as part of their course
- media organisations and the structures within the media industry
- how audiences are defined and how various media texts target different audiences
- various genres in Media and how they can be defined by generic conventions
- researching into relevant media texts using different research methods and techniques

Using a range of digital equipment Students will develop their **SKILLS** in:

- applying media language and media specific terminology into their writing of controlled assessments and examined assessments
- responding to a variety of media texts in an analytical way
- various digital media packages in order to edit their own media practical productions
- working to deadlines

MFL – GCSE FRENCH, GERMAN AND SPANISH

Students will develop their **KNOWLEDGE** of:

- building on grammatical principles established in learning their first foreign language to speed progress in developing grammar in the new language
- using a wide range of regular and irregular verb forms
- using verb forms in past, present and future tenses without prompting
- using time markers to express different time frames
- using adjective agreement confidently in different contexts
- using a wide range of topic specific vocabulary from the GCSE specification to express ideas in creative ways
- manipulating grammar to express more complex ideas

Students will develop their **SKILLS** in:

- making connections between foreign languages to support progress
- redrafting their work to improve accuracy
- practising challenging spellings and key expressions / verbs to improve accuracy in writing
- holding longer conversations and reacting spontaneously to questioning
- developing their ideas and points of view using a wide range of structures
- translating texts using their understanding of both the Target Language and English to convey meaning accurately
- independently using a dictionary or vocab book to deepen vocabulary and as reference material
- understand and appreciate a range of literary texts such as poems, stories and songs, which stimulate ideas and opinions
- reading and understanding texts of varying length to understand both gist and detail
- listening to and understanding speech of varying speed and length to understand both gist and detail
- identify learning needs from tests and GCSE style assessments (study skills)

GCSE MUSIC

Students will develop their **KNOWLEDGE** of:

The Elements of Music

- Melody
- Harmony
- Tonality
- Structure
- Sonority (Timbre)
- Texture
- Tempo, metre and rhythm
- Dynamics and articulation

Appraising music from a variety of musical genres (Developing understanding of the musical features within a variety of musical genres. Exploring the contexts, origins and traditions of different musical styles).

Musical Theory (reading music fluently and following scores using staff notation).

Students will develop their **SKILLS** in:

Performing Music

- demonstrating high level of confidence in performance
- performing fluently and accurately on your chosen instrument as a soloist and as part of an ensemble
- perform on an instrument (or voice) with reasonable technical skill and expression, using tempo, timbre, dynamics and phrasing

Composing Music

- improvising melodic/rhythmic material within extended structures
- using tempo and dynamics creatively
- sustaining and developing musical ideas
- composing music for different genres which explore musical features and devices
- use relevant notations and technology to plan and revise material
- explore contrasts by exploiting the musical elements

GCSE PE

Students will develop their **KNOWLEDGE** of:

- body systems and the impact exercise
- aerobic and anaerobic exercise
- short and long term effects of exercise on the body systems
- biomechanics
- components of fitness
- principles and methods of training
- injury prevention
- effective use of warm ups and cool downs.

Students will develop their **SKILLS** in:

- demonstrating their ability to select and apply appropriate skills, techniques and ideas in a variety of activities
- being able to offer a wide range of solutions to challenges set and make effective decisions about their performance
- analysing and evaluating their own performance, identifying strengths and weaknesses
- understanding the impact of skills, tactics or composition and fitness on the quality and effectiveness of performance
- applying skills, strategies and tactics in a performance environment effectively
- answering short and extended answer questions on all topics covered.

BTEC TECH AWARD IN SPORT

Students will develop their **KNOWLEDGE** of:

- Different types of provision within Sport.
 - The Physical activity opportunities available for different types of participants.
 - Equipment and technological advances in a variety of sports.
 - The components of fitness required for different sports.
 - The impact components have on their performances.
 - Methods of training used within training, and their impact upon sporting performances.
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- The contribution of physical activity to the healthy functioning of the body and mind as part of a healthy active lifestyle
 - both physical and skill related components of fitness
 - the different training methods for developing performance
 - the application of the correct training methods to a variety of sports
 - how to plan a successful training programme to improve sporting performance.

Students will develop their **SKILLS** in:

- Planning and delivering a sporting warm up.
- Working independently to plan, prepare and deliver a full training session to their peers.
- investigating and applying fitness testing to determine fitness levels, showing awareness of normative values for their own age groups
- being able to review individual performance, using ICT to develop feedback methods.

PE: CORE

Students will develop their **KNOWLEDGE** of:

- advanced strategies, tactics and skills used in sports and physical activities
- rules and regulations for a range of sports
- the impact of physical activity on health and wellbeing
- how to perform safely and effectively to enable transition from school sport to sport post 16
- the benefits of leading a healthy active lifestyle through exercise and physical activity outside of school.

Students will develop their **SKILLS** in:

- racquet/striking and fielding/invasion games/health related exercise/climbing/trampolining.
- team work
- using advanced techniques, strategies and tactics in a range of sports in competitive game situations
- being able to make the correct decisions in competitive/performance situations to allow you to beat an opponent regularly and apply knowledge to different contexts/activities
- analysing performance of yourself and others during performance to alter the outcome of a game

GCSE PHOTOGRAPHY

Students will develop their **KNOWLEDGE** of:

- researching effectively – the ability to explore the work of a range of artists and photographers and draw inspiration from techniques, processes and conceptual ideas
- exploring and communicating ideas using the work of others to develop and extend thinking, and to help them make informed decisions with their own work
- having the ability to discuss and compare the work of others, a range of techniques such as lighting, aperture and shutter speeds and making informed decisions about when to apply appropriate techniques
- how ideas, feelings and meanings can be conveyed and interpreted through imagery
- how images, artefacts and products relate to social, historical, vocational and cultural contexts
- a variety of approaches, methods and intentions of contemporary and historical artists, craftspeople and designers from different cultures and their contribution to continuity and change in society
- the possibilities of working with Adobe Photoshop

Students will develop their **SKILLS** in:

- recording experiences and ideas in appropriate forms when undertaking research and gathering, selecting and organising visual, tactile and/or sensory materials and other relevant information
- exploring relevant resources – analysing, discussing and evaluating images, objects and products, making and recording independent judgements in visual and other forms
- generating and exploring potential lines of enquiry using appropriate new media practices and techniques
- applying knowledge and understanding when reviewing and modifying work
- planning and developing ideas in the light of their own and others' evaluations
- organising, selecting and communicating ideas, solutions and responses, and presenting them in a range of appropriate visual, tactile and/or sensory forms including the use of new technologies
- working both as individuals and in collaboration with others in a range of situations
- discussing the work of relevant artists and photographers, using correct Art vocabulary

GCSE PHILOSOPHY AND RELIGION

Students will develop their **KNOWLEDGE** of:

Christianity: beliefs, teachings and practices:

- The nature of God
- The oneness of God and the Trinity
- Different Christian beliefs about creation including the role of Word and Spirit
- Jesus Christ and Salvation (incarnation, crucifixion, resurrection, salvation, life after death, sin, grace and atonement)
- Worship and festivals
- Prayer
- Sacraments (Baptism and Eucharist)
- Pilgrimage
- The role of the church in the local and worldwide community

Islam: beliefs, teachings and practices:

- The six articles of faith in Sunni Islam and five roots of Ulul ad-Din in Shi'a Islam
- The oneness of God (Tawhid)
- Angels, their nature and role including Jibril and Mikar'il and predestination
- Life after Death (Akhirah), human responsibility and accountability, resurrection, heaven and hell
- Authority: Prophet hood (Risalah) including the role and importance of Adam, Ibrahim and Muhammad
- Duties and festivals
- Shahadah (declaration of faith), Salah (prayer), Sawm (fasting), Zakah (charity) and Hajj (pilgrimage) and their significance
- Jihad
- Festivals and commemorations

Students will develop their **SKILLS** of:

- Philosophical and religious thinking and how it influences people's lives
- An awareness of differing viewpoints
- Appraising and appreciating a variety of beliefs and world-views
- Deep thinking skills in connection to ultimate questions
- Listening to others and respectfully disagreeing
- Using evidence from various sources, including religious scripture, to express and evaluate ideas

- Enquiry
- Analysing different ideas and viewpoints and being willing to justify your point of view
- Debating
- Spelling, punctuation and grammar
- Empathy
- Comparison and identifying links between beliefs and points of view
- Putting religious and non-religious scripture into context to draw meaning and conclusions
- Research and interpretation

RS: CORE

Students will develop their **KNOWLEDGE** of:

- Different types of religious dress and their significance
- The law surrounding religious dress in the UK
- Racism, Prejudice and Discrimination
- 'Beyond the Big 6' – exploration of belief systems outside of the 6 main world religions: Scientology, Zoroastrianism, Mormonism, Humanism and Baha'i
- Philosophy – The Butterfly Dream, Identity and Expression (gender and race) and Is boredom good?

Students will develop their **SKILLS** of:

- Maturity, compassion and tolerance towards real world issues
 - Ethical, philosophical and religious thinking and how it influences people's lives
 - An awareness of differing viewpoints
 - Appraising and appreciating a variety of beliefs and worldviews
 - Deep thinking skills in connection to ultimate questions
 - Listening to others and respectfully disagreeing
 - Using evidence from various sources, including religious scripture, to express and evaluate ideas
 - Enquiry
 - Analysing different ideas and viewpoints and being willing to justify your point of view
 - Debating
 - Spelling, punctuation and grammar
 - Empathy
- Comparison and identifying links between differing points of view

GCSE SCIENCE

Students will develop their **KNOWLEDGE** of:

Biology

- cells, subcellular structures and how microscopy is used to examine these
- how genetic material is used as a code to make proteins. Enzymes are important proteins in biology
- metabolic processes such as respiration
- how green plants and algae trap light from the Sun in photosynthesis
- how cells transport many substances across their membranes by diffusion, osmosis and active transport
- stem cells which are found in both plants and animals and can divide, differentiate and become specialised to form tissues, organs and organ systems
- gaseous exchange surfaces and transport systems in multicellular organisms
- the human nervous system
- the role of hormones in the human body
- the role of plant hormones in regulating plant growth and development. They can be used in agriculture to control the rate of growth (Separates only)
- regulation of internal environments (homeostasis) which enables organisms to adapt to change, both internally and externally

Chemistry

- the particle model and its explanation of different states of matter
- how elements are substances that are made up of only one type of atom and atoms of different elements can combine to make compounds
- models of atomic structure
- estimate size and scale of atoms and nanoparticles and describe the properties and uses of nanoparticles (Separates only)
- useful materials that we use today that are mixtures
- method of separating mixtures including filtration, crystallisation, distillation and chromatographic techniques
- what happens when chemical reactions occur in terms of losing, gaining or sharing of electrons
- the physical properties of elements and compounds and how the nature of their bonding is a factor in their properties
- using chemical equations to represent the overall change in a chemical reaction
- conservation of mass

- that chemical reactions are accompanied by an energy change and a simple model involving the breaking and making of chemical bonds can be used to interpret and calculate the energy change
- examples of reactions including reduction, oxidation and neutralisation reactions
- electrolysis
- models of how substances react and the different types of chemical reactions that can occur enable us to predict the likelihood and outcome of a chemical reaction (Separates only)
- the current Periodic Table and the way it reveals the trends and patterns in the behaviour of the elements (Separates only)

Physics

- matter in its different forms, subatomic particles, their relative charges, masses and positions inside the atom
- change in pressure in the atmosphere and in liquids with height (qualitative relationship only) (Separates only)
- floating and sinking and the effect of upthrust (Separates only)
- the effects of forces
- the direction in which forces act to allow understanding of the importance of vector quantities when trying to predict the action
- Newton's laws of motion
- force interactions between objects, which can take place even if they are not in contact
- Forces acting on an object can result in a change of shape or motion.
- interactions between matter and electrostatic fields
- how electrical currents depend on the movement of charge and the interaction of electrostatic fields
- the links between movement of charge and magnetism
- use of magnetic fields to induce electrical currents and the applications of this electromagnetic induction in motors, dynamos and transformers (Separates only)

Students will develop their **SKILLS** in:

- hypothesising and testing theories and concepts
- assessing hazards and taking precautions to minimise the associated risks
- using appropriate apparatus and techniques
- observation, enquiry and problem solving
- analysing methodology, evidence and conclusions
- interpreting and evaluating
- communication, mathematics and the use of technology in scientific contexts