CURRICULUM KNOWLEDGE AND SKILLS SUBJECT REFERENCE GUIDE

YEAR 10

GCSE ART AND DESIGN

Students will develop their **KNOWLEDGE** of:

- **researching effectively** – the ability to explore the work of a range of artists, designers and craftspeople and draw inspiration from techniques, processes and ideas
- **exploring and communicating ideas using the work of others** to develop and extend thinking, and to help themselves make informed decisions with their own work. Having the ability to discuss and compare the work of others
- **a range of processes**, and how to use them within their work; making informed decisions about when to apply appropriate techniques within their work, and developing this
- 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.

Students will develop their **SKILLS** in:

- the ability to **record experiences and ideas** in appropriate forms when undertaking research and gathering, selecting and organising visual, 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** in making images, artefacts and products; reviewing and modifying work and planning and developing ideas in the light of their own and others' evaluations
- **recording ideas, observations and insights** relevant to intentions
- **selecting the most appropriate resources, media, materials, techniques and processes** to apply to their work
- **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
- **discussing** the work of relevant artists
- **critical analysis** of their own work
- using correct **Art vocabulary**
- **annotating and evaluating their own work in relation to their intentions**

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
- system security, including the threats posed to networks and how to identify
- and protect vulnerabilities
- systems software including operating systems and utility system software
- legislation relevant to Computer Science
- how data needs to be converted into a binary format to be processed by a
- computer

Students will develop their **SKILLS** in:

- how to investigate and discuss Computer Science technologies while
- considering: ethical issues, legal issues, cultural issues, environmental
- issues and privacy issues
- 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
- critically appraising evidence presented
- programming techniques including basic programming constructs, loops,
- basic string manipulation, use of arrays and file handling
- using various software applications
- working collaboratively
- identifying potential risks when using ICT and then developing safe working
- practices to overcome these risks
- the use of SQL to search for data
- 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 hexadecimal equivalents and vice versa

GCSE DESIGN TECHNOLOGY

Students will develop their **KNOWLEDGE** of:

Core specialist and technical principles including scientific knowledge. Designing and making principles.

- New and emerging technologies and materials.
- Energy generation and storage.
- Materials, their origins and working properties.
- Basic systems and control.
- Mechanical devices – forces, stresses, motion and mechanisms.
- Social, moral, environmental and ecological implications in design.
- Stock forms types and sizes.
- Manufacturing techniques, processes and scales of production.
- Surface treatments and finishes.
- Art movements from throughout history and their influence on design.
- The work of designers past and present.
- Tools and equipment.
- Implications of designing for a target market including ergonomics and anthropometrics.
- Mathematical principles; fractions, percentages and ratios. Interpreting data. Plot and draw graphs. Surface area and scale. Mathematical drawing.
- Drawing techniques and their uses.

Students will develop their **SKILLS** in;

- Drawing and communicating ideas.
- Modelling and prototyping.
- CAD/CAM.
- Using tools and equipment safely and accurately.
- Testing, refining and evaluating ideas/outcomes.
- Research and analysis.
- Measuring, marking out and cutting.
- Discussing and comparing the work of others.
- Drawing from technical language when annotating.
- Product disassembly.

GCSE ART AND DESIGN 3D.

Students will develop their **KNOWLEDGE** of:

- How sources relate to historical, contemporary, cultural, social, environmental and creative contexts.
- Target market wants that address specific needs.
- The visual elements: colour, line, form, tone, texture, space, proportion, decoration, scale, structure, shape and pattern.
- Materials, their origins and working properties.
- Basic systems and control.
- Manufacturing techniques and processes.
- Surface treatments and finishes.
- Stock forms types and sizes.
- Art movements from throughout history and their influence on design.
- Knowledge of artists/ designers related to a chosen movement.
- Tools and equipment.
- Different drawing techniques and their uses.

Students will develop their **SKILLS** in;

- Drawing and communicating ideas.
- Developing ideas through; modelling, prototyping, construction and assembly.
- CAD/CAM.
- Using tools and equipment safely and accurately.
- Testing, refining and evaluating ideas/outcomes.
- Research and analysis.
- Measuring, marking out and cutting.
- Discussing and comparing the work of others.
- Drawing from technical language when annotating.
- Product disassembly.

GCSE DRAMA

Students will develop their **KNOWLEDGE** of:

- the characteristics of dramatic work including genre, structure, character, form, style, and language
- recognising and understanding the roles and responsibilities of performer, designer and director.
- the play text DNA by Denis Kelly and its social, cultural and historical context
- DNA's original performance context
- the roles and processes undertaken in contemporary professional theatre practice
- how to work with performance discipline and other safe working practices
- the performance practices used in twenty-first century theatre-making
- the production elements and theatrical conventions used to take a play from page to stage
- the role of theatre makers in contemporary practice including performers, directors and designers
- how theatre is created to communicate mean and impact on an audience
- dramatic vocabulary and topic specific terminology
- The dramatic toolbox of theatre practitioners such as Bertolt Brecht, Antonin Artaud, and Konstantin Stanislavski

Students will develop their **SKILLS** in/as:

- creative, effective, independent and reflective students who are able to make informed choices in process and performance
- their ability to analyse and evaluate their own work and the work of others
- their ability to understand how performance texts can be interpreted and performed
- developing a range of theatrical skills and apply them to create performances
- working collaboratively to generate, develop and communicate ideas
- reflect on and evaluate their own work and that of their peers
- creating and developing a devised piece from stimuli
- analysing and evaluating the creative process and group devised performance
- rehearsing, refining and amending work in progress for performance
- voice: use of clarity, pace, inflection, pitch and projection
- physicality: use of space, gesture, stillness and stance
- ability to combine and apply vocal and physical skills
- analysing and evaluating the work of theatre-makers
- recognising specific challenges for performers, directors and designers based on their own experiences in exploring a play text
- analysing and evaluating the ways in which different performance and production elements are brought together to create theatre

GCSE ENGLISH LANGUAGE

Students will develop their **KNOWLEDGE** of:

- how different social historical contexts affect writers' production of their fiction and non-fiction texts
- grammar, in particular phrasal types, how to identify them and how they can be used to create meanings
- a range of subject terminology and how to systematically apply it
- bigger methods, such as tone, setting and characterisation, as well as smaller methods, such as figurative language, in writing
- different formats of texts and their conventions
- a range of fiction and non-fiction texts and the literary conventions that connect them

Students will develop their **SKILLS** in:

- Understanding the importance of reader anticipation of a text.
- Demonstrating understanding of the text.
- Inference about the text effectively.
- Selecting most apt quotations to support understanding and/or inference
- Smoothly embedding quotations and putting them effectively into context.
- Analysis of bigger methods: style/tone.
- Identification and demonstrating understanding of the specific function of language devices.
- Selecting most apt quotes for language analysis.
- Identification & analysis of methods of language and structure, explaining impact of their specific function.
- Manipulation of language and structure to create tone and a strong voice in narrative, descriptive and transactional writing
- Structuring writing to develop a cohesive and logically sequenced argument
- Writing effectively for a range of audiences and purposes
- Conceptualising argument in critical and analytical writing
- Use of spoken voice to engage and persuade audiences

GCSE ENGLISH LITERATURE

Students will develop their **KNOWLEDGE** of:

- the social historical contexts of the texts they are studying
- different genres and their conventions
- writer's themes, ideas and purposes in writing
- how writers are influenced by their social contexts and how they attempt to engage and affect their audiences
- writers uses of bigger and smaller methods to affects meanings, representations, ideas and audiences

Students will develop their **SKILLS** in:

- Understand the importance of audience anticipation of a text.
- Understand & infer about characters & events.
- Select most apt quote to support understanding & inference.
- Smoothly embed quotations.
- Effectively employ references to the text.
- Approach themes as key aspects of life/society that inspire writers to produce their texts. (AO1 & AO3)
- Always link AO1 & AO3 when responding to the text, using 'verbs of analysis' & key tier 2 vocabulary to do so.
- Approach context as the influencing factors which shape writers' texts.
- Analyse bigger methods: characterisation, dramatic irony & structure (AO2)
- Be able to identify & understand specific function of language devices.
- Be able to effectively structure a literature essay.

GCSE FOOD PREPARATION & NUTRTION

Students will develop their **KNOWLEDGE** of:

1. Food commodities
2. Principles of nutrition
3. Diet and good health
4. The science of food
5. Where food comes from
6. Cooking and food preparation

- The functional properties and chemical characteristics of food as well as a sound knowledge of the nutritional content of food and drinks.
- The relationship between diet, nutrition, and health, including the physiological and psychological effects of poor diet and health
- The economic, environmental, ethical and socio-cultural influences on food availability, production processes, diet and health choices.
- Functional and nutritional properties, sensory qualities and microbiological food safety considerations when preparing, processing, storing, cooking and serving food
- A range of ingredients and processes from different culinary traditions (traditional British and international) to inspire new ideas or modify existing recipes.

Students will develop their **SKILLS** in:

- planning, preparing and cooking a variety of food commodities whilst using different cooking techniques and equipment
- preparation of ingredients to make a selection of recipes
- cooking a selection of recipes
- presenting a selection of recipes
- selecting appropriate preparation, cooking and serving techniques when producing dishes
- working safely: follow correct personal and food safety and hygiene practices and procedures
- using sensory descriptors appropriately and correctly

GCSE GEOGRPAHY

Students will develop their **KNOWLEDGE** of:

Living with the physical environment

- The challenge of the natural hazards
- The living world
- Physical landscape in the UK

Challenges in the human environment

- Urban issues and challenges
- The changing economic world
- The challenge of resource management

Geographical application

- Issue evaluation
- Fieldwork

Students will develop their **SKILLS** in:

- Cartographic skills
- Graphical skills
- Numerical skills
- Statistical skills
- Use of qualitative and quantitative data
- Literacy

BTEC HEALTH AND SOCIAL CARE

Students will develop their **KNOWLEDGE** of:

- The human life span and the 6 stages which make up the average human life.
- How physical, intellectual, emotional and social development progresses across the 6 life stages.
- Different factors which can affect the progress of development in each life stage. (Genetic disease, lifestyle, poverty etc).
- Life events that can alter growth and development in each life stage.
- Types of support that are available to those who need it (in both health care and social care).
- Barriers to gaining access to health and social care and how these barriers are overcome.
- Different careers within health and social care and how to access these types of careers.

Students will develop their **SKILLS** in:

- First aid and first response health care.
- Demonstrating the core values from health and social care. (Empathy, compassion, respect).
- Extended writing techniques (writing reports).
- Research – knowing how to extract relevant information from trustworthy sources.
- Basic IT skills.
- Linking knowledge from lessons to specific jobs within the industry.

GCSE HISTORY

Students will develop their **KNOWLEDGE** of:

- Germany, 1890-1945: democracy and dictatorship
- Conflict and tension: the inter-war years, 1918-1939
- Britain: migration, empires and the people: c790 to the present day
- Elizabethan England, c1568-1603

Students will develop their **SKILLS** in:

- Causation
- Change and Continuity
- Historical evidence
- Interpretation

GCSE LANGUAGES

Students will develop their **KNOWLEDGE** of:

- 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 their own ideas

Students will develop their **SKILLS** in:

- checking work systematically for errors
- reviewing work and correcting errors regularly (study skills)
- speaking for longer with increasing spontaneity
- developing opinions using a range of structures
- using language creatively to express their own ideas
- understanding the gist of more complicated passages
- independently using a dictionary and/or vocab book as reference for support and to deepen vocabulary
- understanding and appreciating a range of literary texts such as poems, stories and songs, which stimulate ideas and opinions
- translating short texts between English and the target language
- Structuring extended pieces of writing, responding to pre-prepared stimuli

GCSE MATHEMATICS

Students will develop their **KNOWLEDGE** of:

- data and statistical analysis using real life contexts
- trigonometry – a big picture encompassing work on similarity, congruency, circles, Pythagoras' theorem amongst other topics
- why such advances in mathematics were of importance and how they are now used in the modern day
- the connection between different representations – in particular that between graphs and equations
- probability and the study of likelihood
- surface area and volume of more complex shapes
- quadratic equations – solving, sketching, graphing, manipulating
- when problems are unsolvable (e.g. extracting the square root of a negative number)
- transformations of shapes
- equations of circles – building upon earlier equations work
- constructions and loci and when these may provide solutions to problems
- iterative sequences – generating sequences, describing patterns, approximating solutions to equations

Students will develop their **SKILLS** in:

- making connections across topics to form one larger, more coherent, picture of mathematics
- beginning with what they know when faced with a problem they do not initially know how to start
- checking their work systematically for errors and for signs that answers are reasonable (estimating skills)
- drawing images and diagrams to assist with problem solving and to enable complex situations to be digested
- confidently challenging ideas as a means to develop deeper understanding
- using mathematical knowledge and skills from Year 7, Year 8 and Year 9 within new problems
- taking on longer problems which require more steps and more resilience than at KS3 level
- the vocabulary of mathematics, including an appropriate use of mathematical symbols
- explaining their knowledge and understanding to another person, either verbally or through written communication
- identifying the crux of a problem by working backwards from a given finish line

GCSE MEDIA STUDIES

Students will develop their **KNOWLEDGE** of:

- the conventions of print and audio-visual Media forms
- the contexts of the Media texts they are studying
- how Media texts are influenced by their social, cultural, historical and political contexts
- how producers use Media language to create meaning
- how and why the Media represents the version of reality it does
- the role processes of selection, combination and mediation play in representation
- how and why Media texts appeal to their audiences
- the structures and regulation of Media institutions and industries
- the increasing role synergy and convergence play in promoting Media texts

Students will develop their **SKILLS** in:

- using Media terminology in their analysis
- using Adobe Photoshop for the creation of Media products
- identifying and understanding the function of media language devices
- applying the theoretical framework to Media texts
- applying gender, race and anthropological theory to media texts
- structuring short and long exam responses effectively

GCSE PHOTOGRAPHY

Students will develop their **KNOWLEDGE** of:

- Figurative and non-figurative forms, image manipulation, close up, imaginative interpretations.
- The visual and tactile elements such as: colour, line, tone, texture, shape, pattern, composition, scale, sequence, surface and contrast.
- how ideas, feelings and meanings can be conveyed and interpreted though 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.
- Knowledge of the key camera functions and know how they can be used (see below).

Students will develop their **SKILLS** in:

Students will take part in skills-based workshops for the first half of the year/first project where they have the chance to develop and master basic and advanced photography skills.

- Camera safety
- Zoom
- Focus
- Composition
- Aperture
- Lighting
- Colour lighting
- Depth of Field
- Shutter Speed (Fast and Slow)
- Light Painting
- ISO
- Full manual control
- White balance
- Exposure value
- Physical and Digital image manipulation
- Photoshop editing including:
  - basic editing (crop, contrast, brightness, hue, saturation.)
  - Superimposition (cut and paste)
  - Multiple exposure
- use narrative in images, students will be able to use visual clues to tell a story through image.
- analysing their own work. To say what is good and what could be improved.
- take inspiration from artists work and use elements of their work in their own shoots and edits.
- evaluate the success of a shoot in relation to their intentions.

GCSE PHYSICAL EDUCATION

Students will develop their **KNOWLEDGE** of:

- The structure and functions of the musculoskeletal system.
- The structure and functions of the cardio-respiratory system.
- Aerobic and anaerobic exercise
- The short-term and long-term effects of exercise.
- Lever systems and examples of their use in activity and the mechanical advantage they provide in movement.
- Planes of axes and movement.
- The relationship between health and fitness and the role that exercise plays in both.
- The components of fitness, benefits for sport and how fitness is measured and improved.
- The principles of training and their application to personal exercise/training programmes.
- How to optimise training and prevent injury.
- Effective use of warm up and cool downs.
- Using data to interpret information from any of the above topics.

Students will develop their **SKILLS** in:

- Practical skills in Trampolining, Table Tennis and Badminton.
- Practical skill development will focus on skills in isolation and within competitive gameplay.
- Students will also continue to develop their skills through the elective program, lunch time clubs and before school sessions.
- Analysing and evaluating performance through a personal exercise programme in order to improve/optimise performance in a chosen physical activity.

BTEC PHYSICAL EDUCATION

Students will develop their **KNOWLEDGE** of:

- The components of skill related fitness.
- The components of physical fitness.
- Why components of fitness are important for successful participation in given sports.
- Exercise intensity and how it can be determined.
- The basic and additional principles of training.
- Different fitness training methods and their requirements.
- Fitness test methods for components of fitness.
- Importance of fitness testing to sports performers and coaches.
- Requirements for administration of each fitness test.
- Interpretation of fitness test results.
- Rules, regulations and scoring systems for selected sports.
- Designing a personal fitness training programme.
- Musculoskeletal systems and cardiorespiratory system and the effects on the body during fitness training.
- Implementing a self-designed personal fitness training programme to achieve goals and objectives.
- Reviewing a personal fitness training programme.

Students will develop their **SKILLS** in:

- Practically demonstrate skills, techniques and tactics in selected sports.
- Correct application of skills, body positions in selected sports.
- Perform isolated practices, conditioned practice and competitive situations.
- Reviewing sports performance.
- Designing a personal fitness training programme.
- Completing a fitness training programme.

CORE PHYSICAL EDUCATION

Students will develop their **KNOWLEDGE** of:

- Advanced strategies, tactics and skills used in sports and physical activities.
- Mental and physical advantages of participating in sport and activity.
- Full joint movement analysis around multiple joints
- Components of fitness; cardiovascular fitness, muscular endurance, power, speed, reaction time, flexibility, muscular strength, co-ordination.
- The benefits of leading a healthy active lifestyle – through exercise and diet, to also include physical activity outside of school.
- How to access sport in the community for participating in sport after life at LCH.

Students will develop their **SKILLS** in:

- Invasion Game, Trampolining, OAA, Table Tennis, Strike and Field x 2
- Using advanced techniques, strategies and tactics in competitive game situations.
- Decision making in attacking and defending principles to overcome an opponent.
- Analyse performance and identify ways to improve performance to overcome opponents.
- Officiating in a variety of roles within a sport.

GCSE SCIENCE

Students will develop their **KNOWLEDGE** of:

Biology:

- Cell structure and function in Eukaryotes and Prokaryotes.
- The importance of stem cells in plants and animals.
- Transportation of molecules (including osmosis, diffusion and active transport)
- The importance of enzymes in living organisms.
- How the respiratory and circulatory systems work together and respond to changes in respiration requirements.
- How communicable and non-communicable diseases develop in animals and plants, and how modern drugs are developed to treat diseases.
- Photosynthesis and the importance of plants to all living organisms.

Chemistry:

- Atomic structure and how this determines reactivity and bonding between atoms.
- Different separation techniques and when they should be applied.
- Types of chemical reaction (neutralisation, metals and acids, metals and water).
- Energy changes within chemical reactions, resulting in either an exothermic reaction or an endothermic reaction.
- Conservation of mass during a chemical reaction.

Physics:

- Energy stores and energy transfer in open and closed systems.
- How current, voltage and resistance interact in series and parallel circuits.
- Atomic structure in order to understand nuclear radioactivity.
- Particle model of matter (Density, specific heat capacity and gas temperature and pressure).

Students will develop their **SKILLS** in:

- checking work systematically for errors
- reviewing work and correcting errors regularly (study skills)
- Converting units (including micrometres, nanometres, millimetres)
- Rounding numbers to decimal places or significant figures.
- Writing numbers in standard form.
- Rearranging equations to change the subject.
- Following methods in order to achieve accurate results.
- Plotting graphs from data collected.
- Using ‘how science works’ language within writing.
- Calculating mean, mode and median from sets of results.
- Working within a team during required practicals.

- Understanding command words and how they determine what to write.
- Answering exam questions.

GCSE ART AND TEXTILES

Students will develop their **KNOWLEDGE** of:

- Understand how to **research effectively** by exploring the work of a range of artists, designers and craftspeople and to draw inspiration from techniques, processes and ideas.
- Exploring the work of others and **communicating ideas** about their work to make informed decisions about how to develop their own practice.
- To **be aware of a range of techniques** and to understand how to carry them out. To be able to develop their own practice by manipulating these techniques through experimentations.
- How ideas, feelings and meanings can be shared to **visually describe** the journey of their coursework.
- 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.

Students will develop their **SKILLS** in:

- The ability to **record experiences and ideas** in appropriate forms when undertaking research and gathering, selecting and organising visual, and other relevant information.
- **Exploring relevant resources** – analysing, discussing and evaluating images, products and textiles, making and recording independent judgements in visual and other forms.
- **Generating** and **exploring** ideas by experimenting with techniques.
- **Using equipment** safely and accurately.
- **Applying knowledge and understanding** in making images, artefacts and products; reviewing and modifying work and planning and developing ideas in the light of their own and others' evaluations.
- **Selecting the most appropriate resources, media, materials, techniques and processes** to apply to their work.
- **Discussing** the work of relevant artists and designers
- **Critical analysis** of their own work
- Using correct **Art and Textiles vocabulary**
- Developing ideas through; **modelling and toiling garments**.
- **Using equipment** safely and accurately.
- **Pattern making** and **construction**.
- Drawing from technical language when **annotating**.