

Year 12 Half Term 2 Curriculum

Subject	Half Term 2 – Topic/Summary of Powerful Knowledge
English Literature	<p><u>Introduction to Tragedy:</u></p> <ul style="list-style-type: none"> • Recall and deepening of knowledge of Victorian Era: industrialisation, the rural, religion, paganism, sexuality and morality, patriarchy. • Literary conventions of Victorian Literature inc. representations of the female, representation of the rural lower classes and how these were subverted. • Recall and deepening of context of late Elizabethan/Early Jacobean times: Great Chain of Being, role of men and women, racism. • Develop understanding of plot, character, dramatic/authorial methods, structure and genre through analysis of the texts. • Begin to understand the different ways to read literature and how to analyse a text using the following lenses: feminist, post-colonial. • Construct tightly focused thesis statements to present an idea to be tested against different interpretations and elements of tragedy in the text. • Deepen understanding of Marxist theory including meaning behind movement, prolific figures and importance of literature in movement. • Deepen understanding of narrative theory including structure, narrative voice and perspective, and gaps in narrative. • Recall and deepening of knowledge of eras in history such as Victorian era and Pre and Post-war America. • Develop an understanding of literary movements such as postmodernism and futurism. • Further develop understanding of plot, character, poetic/authorial methods, structure and genre through analysis of the texts. • Understanding of HOW to integrate critical theory into their own writing: how to cite a critic, how to embed critical opinions into writing, how to formulate a bibliography. <p><i>Set texts:</i> <i>Othello (Shakespeare)</i> <i>Tess of the D'Urbervilles (Hardy)</i></p>
Maths	<p><u>Representations of Data</u></p> <ul style="list-style-type: none"> • Outliers • Box Plots • Cumulative frequency • Histograms • Comparing data <p><u>Correlation</u></p> <ul style="list-style-type: none"> • Correlation • Linear regression <p><u>Graphs and Transformations</u></p> <ul style="list-style-type: none"> • Cubic graphs • Quartic graphs • Reciprocal graphs

	<ul style="list-style-type: none"> • Points of intersection • Translating graphs • Stretching graphs • Transforming functions <p><u>Algebraic Methods</u></p> <ul style="list-style-type: none"> • Algebraic fractions • Dividing polynomials • The factor theorem • Mathematical proof • Methods of proof <p><u>Modelling in Mechanics</u></p> <ul style="list-style-type: none"> • Constructing a model • Modelling assumptions • Quantities and Units • Working with vectors <p><u>Constant Acceleration</u></p> <ul style="list-style-type: none"> • Displacement-time graphs • Velocity-time graphs • Constant acceleration formulae • Vertical motion underground <p><u>Straight Line Graphs</u></p> <ul style="list-style-type: none"> • $y=mx+c$ • Equations of straight lines • Parallel and perpendicular lines • Length and area • Modelling with straight lines
Science	<p><u>Biology</u></p> <p><u>Proteins</u></p> <p>Amino acids are the monomers from which proteins are made. The general structure of an amino acid.</p> <p>A condensation reaction between two amino acids forms a peptide bond.</p> <ul style="list-style-type: none"> • Dipeptides are formed by the condensation of two amino acids. • Polypeptides are formed by the condensation of many amino acids. <p>A functional protein may contain one or more polypeptides.</p> <p>The role of hydrogen bonds, ionic bonds and disulfide bridges in the structure of proteins.</p> <p>Proteins have a variety of functions within all living organisms. The relationship between primary, secondary, tertiary and quaternary structure, and protein function.</p> <p>The biuret test for proteins.</p> <p><u>Enzymes</u></p> <p>Each enzyme lowers the activation energy of the reaction it catalyses.</p> <p>The induced-fit model of enzyme action.</p>

The properties of an enzyme relate to the tertiary structure of its active site and its ability to combine with complementary substrate(s) to form an enzyme-substrate complex.

- The specificity of enzymes
- The effects of the following factors on the rate of enzyme-controlled reactions – enzyme concentration, substrate concentration, concentration of competitive and of non-competitive inhibitors, pH and temperature.
- **Required practical 1:** Investigation into the effect of a named variable on the rate of an enzyme-controlled reaction.

Structure of DNA and RNA

- Deoxyribonucleic acid (DNA) and ribonucleic acid (RNA) are important information-carrying molecules. In all living cells, DNA holds genetic information and RNA transfers genetic information from DNA to the ribosomes.
- Ribosomes are formed from RNA and proteins.
- Both DNA and RNA are polymers of nucleotides. Each nucleotide is formed from a pentose, a nitrogen-containing organic base and a phosphate group:
- The components of a DNA nucleotide are deoxyribose, a phosphate group and one of the organic bases adenine, cytosine, guanine or thymine.
- The components of an RNA nucleotide are ribose, a phosphate group and one of the organic bases adenine, cytosine, guanine or uracil.
- A condensation reaction between two nucleotides forms a phosphodiester bond.
- A DNA molecule is a double helix with two polynucleotide chains held together by hydrogen bonds between specific complementary base pairs.
- An RNA molecule is a relatively short polynucleotide chain.
- The semi-conservative replication of DNA ensures genetic continuity between generations of cells.
- The process of semi-conservative replication of DNA in terms of:
 - unwinding of the double helix
 - breakage of hydrogen bonds between complementary bases in the polynucleotide strands
 - the role of DNA helicase in unwinding DNA and breaking its hydrogen bonds
 - attraction of new DNA nucleotides to exposed bases on template strands and base pairing
 - the role of DNA polymerase in the condensation reaction that joins adjacent nucleotides.

ATP

- single molecule of adenosine triphosphate (ATP) is a nucleotide derivative and is formed from a molecule of ribose, a molecule of adenine and three phosphate groups.
- Hydrolysis of ATP to adenosine diphosphate (ADP) and an inorganic phosphate group (P_i) is catalysed by the enzyme ATP hydrolase.
- The hydrolysis of ATP can be coupled to energy-requiring reactions within cells.
- The inorganic phosphate released during the hydrolysis of ATP can be used to phosphorylate other compounds, often making them more reactive.

- ATP is resynthesised by the condensation of ADP and P_i. This reaction is catalysed by the enzyme ATP synthase during photosynthesis, or during respiration.

Water

- Water is a major component of cells. It has several properties that are important in biology. In particular, water:
 - is a metabolite in many metabolic reactions, including condensation and hydrolysis reactions
 - is an important solvent in which metabolic reactions occur
 - has a relatively high heat capacity, buffering changes in temperature
 - has a relatively large latent heat of vaporisation, providing a cooling effect with little loss of water through evaporation
 - has strong cohesion between water molecules; this supports columns of water in the tube-like transport cells of plants and produces surface tension where water meets air.

Inorganic ions

- Inorganic ions occur in solution in the cytoplasm and body fluids of organisms, some in high concentrations and others in very low concentrations.
- Each type of ion has a specific role, depending on its properties.
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Methods of studying cells

The principles and limitations of optical microscopes, transmission electron microscopes and scanning electron microscopes.

Measuring the size of an object viewed with an optical microscope. The difference between magnification and resolution.

Use of the formula:

Principles of cell fractionation and ultracentrifugation as used to separate cell components.

All cells arise from other cells

Within multicellular organisms, not all cells retain the ability to divide.

Eukaryotic cells that do retain the ability to divide show a cell cycle.

- DNA replication occurs during the interphase of the cell cycle.
- Mitosis is the part of the cell cycle in which a eukaryotic cell divides to produce two daughter cells, each with the identical copies of DNA produced by the parent cell during DNA replication.

The behaviour of chromosomes during interphase, prophase, metaphase, anaphase and telophase of mitosis. The role of spindle fibres attached to centromeres in the separation of chromatids.

Division of the cytoplasm (cytokinesis) usually occurs, producing two new cells.

Physics

Mechanics: Force, energy and momentum

- Scalars and vectors
- Moments
- Motion along a straight line
- Projectile motion
- Newton's laws of motion

	<ul style="list-style-type: none"> • Momentum • Conservation of energy <p>Electromagnetic radiation and quantum phenomena</p> <ul style="list-style-type: none"> • The photoelectric effect • Collisions of electrons with atoms • Energy levels and photon emission • Wave-particle duality
History	<p>Cold War in Asia -</p> <ul style="list-style-type: none"> • Korean War, outbreak, • events of the war, • Truman and MacArthur, • outcome, post war Korea, • Bandung Conference
Geography	<p><u>Changing Places</u></p> <ul style="list-style-type: none"> • Clone towns • Representation of place • How representation of a place is expressed • What contributes to character of a place • Perception and sense of place. <p><u>Natural hazards</u></p> <ul style="list-style-type: none"> • Tropical storms • Evidence of climate change • Forest fires • Mitigation and adaptation.
Art	<p><u>A-Level - Personal Investigation.</u></p> <ul style="list-style-type: none"> • Contextual Studies Drawing and painting skills and techniques. • Collation of own photographs and Primary/Secondary sources. • Mind Map/Brainstorm Research chosen topic and relevant artists. • Written notes and critical analysis. <p><u>BTEC - Unit 12 – Fine Art Materials, techniques and Processes</u></p> <ul style="list-style-type: none"> • Begin contextual Studies and experimental drawing techniques with various artist references and media. • Explore 2D, 3D + digital materials, techniques + processes used to produce fine art.
Photography	<p><u>Seasons project</u></p> <ul style="list-style-type: none"> • This unit gives students the opportunity to complete a short project that helps them to work through the assessment objectives.
Business	<p><u>Unit 1: Exploring Enterprise</u></p> <p>Investigate how businesses are organised – their structure and their aims and objectives.</p> <p>Unit 3 Personal & Business Finance</p> <ul style="list-style-type: none"> • Explore the personal finance sector • Features of financial institutions • Communicating with customers

	<ul style="list-style-type: none"> • Consumer protection in relation to personal finance · Information, guidance and advice • Understand the purpose of accounting • Types of income and expenditure • Sources of finance 		
Computing	<p><u>Web development</u> – students will demonstrate an understanding of a problem by using abstraction and decomposition to create a list of client requirements alongside possible user requirements and set out a project plan that details the steps required to meet these requirements.</p> <ul style="list-style-type: none"> • Show/develop an understanding of the steps involved in developing a design for a client website by: • Creating a problem definition statement requirement: intended audience, full summary of the problem to be solved, constraints, benefits, nature of interactivity, complexity • of the website. • Abstracting the purpose requirements as defined in a client brief for their interactive website. • Creating a project plan that shows the entirety of the project life cycle including key milestones and an overall deadline 		
Games Design	<p>Students will have to demonstrate knowledge and understanding of the media production process and relate considerations when responding to a brief.</p> <ul style="list-style-type: none"> • Use the internet to gather Primary and secondary information including quantitative and qualitative information • Research skills that demonstrate ability to identify outcomes demographically • Using Microsoft Excel to develop data from surveys and questionnaires including creating graphs and charts • Data analysis using excel • Imaging software to create visualisations based on their chosen commission (website, leaflet, game etc.) • Persuasive writing to win the bid for the commission idea. 		
Film Studies	<p><u>Global Film:</u></p> <ul style="list-style-type: none"> • Social, Historical and Institutional Contexts • Key similarities and differences with Hollywood film • Representation of gender, race and age • Aesthetics and audience response • How key elements of film language convey key themes to the audience <p><i>Set texts:</i> <i>Pan's Labyrinth (del Toro, 2006)</i> <i>City of God (Meireilles, 2002)</i></p>		
Health	<table border="1"> <tr> <td>Extended Certificate (Single HSC)</td> <td>Diploma (Double HSC)</td> </tr> </table>	Extended Certificate (Single HSC)	Diploma (Double HSC)
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	<p><u>Human lifespan development – Unit 1</u></p> <ul style="list-style-type: none"> • Emotional growth and development • Social growth and development <p><u>Meeting Individual Needs – Unit 5</u></p> <ul style="list-style-type: none"> • Skills and attributes • Building positive relationships • Empathy theories 	<p><u>Human lifespan development – Unit 1</u></p> <ul style="list-style-type: none"> • Emotional growth and development • Social growth and development <p><u>Meeting Individual Needs – Unit 5</u></p> <ul style="list-style-type: none"> • Skills and attributes • Building positive relationships • Empathy theories <p><u>Principles of safe practice – Unit 7</u></p> <ul style="list-style-type: none"> • Vulnerability to abuse and neglect • Reducing vulnerability • Strategies and methods for suspected abuse and neglect <p><u>Physiological disorders – Unit 14</u></p> <ul style="list-style-type: none"> • Causes, signs and symptoms (Alzheimer’s) • Impact on body systems • Impact on health and wellbeing
Music	<p><u>Unit 1: Practical Music Theory and Harmony</u></p> <ul style="list-style-type: none"> • Rhythm and pitch in alternative forms of notation • Guitar tablature. • Tonic sol-fa. • Graphic scores. • Drum notation. • Chord chart. • Lead sheet. A3 How tempo, dynamics and expression can be notated • Metronome markings. • Expressions for tempo and tempo changes. • Expressions for dynamics and dynamic changes. • Articulation markings. • Instrumental and vocal techniques such as breathing, glissando, trills, pedal marks etc. <p><u>Unit 3: Ensemble Performance</u></p> <ul style="list-style-type: none"> • Explore ensemble skills and techniques involved in working as part of a musical ensemble. • Personal ensemble management skills • Ensemble public performance 	
PE	<p><u>Exam Unit</u></p> <p><u>Unit 1 – Body systems and the effects of physical activity</u></p> <ul style="list-style-type: none"> • LO2: Understand the muscular system in relation to exercise and physical activity • LO3: Understand the cardiovascular system in relation to exercise and physical activity <p><u>Coursework Unit</u></p> <p><u>Unit 2 – Sports coaching and activity leadership</u></p> <ul style="list-style-type: none"> • LO2: Understand principles which underpin coaching and leading 	

	<ul style="list-style-type: none"> • LO3: Be able to use methods to improve skills, techniques and tactics in sport
RE/PSHE	<u>Philosophy:</u> <ul style="list-style-type: none"> • How do we put together a good argument? • Philosophical language • Beauty in the world • Doing the right thing. • Moral responsibilities
Psychology	<u>Unit 1 Exam Unit</u> Application of approaches in Psychology <ul style="list-style-type: none"> • Aggression in society • Gender • Consumer behaviour Revision to prepare for external exam in January
Criminology	<u>Unit 1 Controlled Assessment Unit</u> <ul style="list-style-type: none"> • Media representation of crime and the impact on the public perception • Methods of collecting statistics about crime • Comparing and designing campaigns for change • Justify a campaign for change
Sociology	<u>Families and households</u> <ul style="list-style-type: none"> • The relationship of the family to the social structure and social change, with particular reference to the economy and to state policies. • This will include Marxist perspectives on the role of the family in society, feminist perspectives on the role of the family in society and postmodern/modern/late modern perspectives on the role of the family in society. <u>Education</u> <ul style="list-style-type: none"> • Differential educational achievement of social groups by social class including external factors including material deprivation, cultural deprivation and cultural capital and internal factors including relationships and processes within schools including teacher/pupil relationships, pupil identities and subcultures, the hidden curriculum, and the organisation of teaching and learning.