

Year 13 TERMLY CURRICULUM

Computer Science

Creative Digital Media Production

Mathematics

Further Mathematics

Term 1

Programming Project - Students will continue with their programming project with emphasis on writing the required code and testing their solution throughout production. Students will critically evaluate their solution.

Students will build upon the algebraic methods studied in year 12. It will extend onto partial fractions and more complicated algebraic division. Students will do detailed work with functions; finding domains, ranges, composite functions and the inverse of a function. They will learn about modulus functions and how to represent these graphically. In Statistics, students will measure correlation and perform hypothesis testing for zero correlation. In Mechanics they will do further work with moments.

Students will study complex numbers in further detail, multiplying, dividing and finding n th roots of a complex number. They will also study series, including Maclaurin series

Term 2

Computer Related Legislation and Moral, Social and Ethical Issues + Boolean Algebra - Students will finalise their theoretical study in term 2 through the study of the operating system and its purpose in a computer system. Students will study the legal, moral and ethical concerns involved in computer science and will work on how to effectively apply their knowledge and understanding to extended exam responses. Students will start learning Boolean Algebra.

Students will understand the differences between arithmetic and geometric sequences and will use sigma notation. The term will focus on a more detailed look into trigonometry, introducing students to radians, inverse trigonometric functions and double angle formulae. In Statistics, they will calculate conditional probability from Venn and Tree diagrams. In Mechanics, they will study projectiles.

Students will evaluate improper integrals and differentiate and integrate inverse trigonometric functions. They will also study volumes of revolution to a greater depth, including parametrically defined curves.

Term 3

Exam Skills / Revision - Students will spend term 3 on key exam skills, particularly algorithmic questions and extended responses.

Students study parametric equations and apply their trigonometry work to find Cartesian equations. The rest of the term will centre on differentiation. Students will learn to differentiate exponentials, logarithms, and use the chain, product and quotient rule to differentiate more complex functions. In Statistics, they will study the Normal Distribution combining this with previous work on hypothesis testing. In Mechanics, they will look at the Application of Forces, studying static and connected particles.

Students will study polar coordinates and equations, sketching curves and finding the area enclosed by a polar curve. They will also be introduced to hyperbolic functions, differentiating, integrating and finding the inverse.

Term 4

Exam Skills / Revision - Students will spend term 3 on key exam skills, particularly algorithmic questions and extended responses.

Students will integrate using trigonometric identities, reverse chain rule, substitution and 'by parts' They will also use partial fractions to integrate and find areas under graphs. The term will finish using numerical methods to solve equations and use vectors in 3D. In Mechanics, they will study further kinematics using differentiation and integration with vectors.

The course will be completed by studying methods in first order and second order differential equations. They will also model with differential equations including simple harmonic motion.

Term 5

Exams

Year 13 TERMLY CURRICULUM

Physics

Chemistry

Biology

Applied Science

Term 1

Module 5: Newtonian World and Astrophysics. Covering thermal physics, circular motion and oscillations. STEAM Skills Focus - Lab skills and adaptability.

This term we will complete the Rates, Equilibrium and pH module, by looking into how acids behave in different environments, how we calculate pH in these different environments and how we minimise pH changes in the body. We will then start to explore how energy changes occur when chemicals dissolve to make a solution. STEAM Skills Focus - Problem-Solving

Module 5: Covering; Communication and homeostasis, Excretion, Neuronal and hormonal communication and the start of animal and plant responses. Students will study the kidneys, liver and lungs and how they are all involved in the removal of toxic products of metabolism from the blood and therefore contribute to homeostasis. Understanding that the kidneys play a major role in the control of the water potential of the blood. The liver also metabolises some toxins that are ingested. In terms neural communication understanding the stimulation of sensory receptors leads to the generation of an action potential in a neurone also studying the transmission between neurones takes place at synapses. Finally hormonal communication; understanding the ways in which specific hormones bring about their effects are used to exemplify endocrine communication and control. That treatment of diabetes is used as an example of the use of medical technology in overcoming defects in hormonal control systems. STEAM Skills Focus - time management, collaboration, making predictions, evaluating and analysing.

This term, we will finish any outstanding work in Unit 6 and start of Unit 18 & 21. These units help the student gain the skills needed to take a product through all stages of development from idea to development to quality control. STEAM Skills Focus - Problem - Solving

Term 2

Module 5: Newtonian World and Astrophysics. Covering gravitational fields, astrophysics and cosmology. Module 6: Particles and Medical Physics. Covering capacitors and electric fields. STEAM Skills Focus - Presentation and research skills.

This term will then continue to work on energy changes in reaction by looking at how electricity is generated through the changing of charge on ions and atoms in the ion. We will then move on to explore transition metals and how they react and form different structures. STEAM Skills Focus - Communication

Module 5: Covering; The continuation of animal and plant responses, Photosynthesis and Respiration. This topic studies plant responses to environmental changes and that they are coordinated by hormones, some of which are important commercially. In animals, responding to changes in the environment is a complex and continuous process, involving nervous, hormonal and muscular coordination. Understanding that photosynthesis is the process whereby light from the Sun is harvested and used to drive the production of chemicals, including ATP, and used to synthesise large organic molecules from inorganic molecules. Finally the study of respiration being the process whereby energy stored in complex organic molecules is transferred to ATP. ATP provides the immediate source of energy for biological processes. STEAM Skills Focus - teamwork, analysis, time management, presentation skills.

This term we will continue working on Unit 18 & 21. Additionally, we will prepare for the Unit 2 exam. STEAM Skills Focus - Communication

Term 3

Module 6: Particles and Medical Physics. Covering Electromagnetism, Nuclear and particle physics and medical imaging. STEAM Skills Focus - Data analysis and evaluation.

In this term we will build further on our Organic Chemistry knowledge by looking at amines, amides, benzene and cyclic compounds. We will explore ways to identify not only the functional groups on these compounds, but also the exact structure of these compounds. STEAM Skills - Creativity

Module 6: Covering; Cellular control, Patterns of inheritance, manipulating the genome and Ecosystems. This module covers the role of genes in regulating and controlling cell function and development. Heredity and the mechanisms of evolution and speciation are also covered. Some of the practical techniques used to manipulate DNA such as sequencing and amplification are considered and their therapeutic medical use. The use of microorganisms in biotechnology is also covered. Both of these have associated ethical considerations and it is important that learners develop a balanced understanding of such issues. Learners gain an appreciation of the role of microorganisms in recycling materials within the environment and maintaining balance within ecosystems. The need to conserve environmental resources in a sustainable fashion is considered, whilst appreciating the potential conflict arising from the needs of an increasing human population. Learners also consider the impacts of human activities on the natural environment and biodiversity. Cellular control involves the way in which cells control metabolic reactions determines how organisms, grow, develop and function. Inheritance looks into Isolating mechanisms can lead to the accumulation of different genetic information in populations, potentially leading to new species. Over a prolonged period of time, organisms have changed and some have become extinct. The theory of evolution explains these changes. Humans use artificial selection to produce similar changes in plants and animals. STEAM Skills Focus - independence, teamwork, analysis and evaluation.

This term we will continue working on Unit 18 & 21. STEAM Skills Focus - Creativity

Year 13 TERMLY CURRICULUM

Physics

Chemistry

Biology

Applied Science

Term 4

Thorough revision and consolidation of all A level content and exam preparation through past papers. STEAM Skills Focus - Self reflection and evaluation.

This term will focus on a series of lessons on each module where structured options are provided allowing a choice in the content and level of work. This allows flexibility in learning to ensure that the needs of all learners is being met. This provides the scaffolding and structured to develop knowledge, understanding and exam technique. This is used to prepare students for completing the A2 exams. STEAM Skills Focus - Collaboration

Module 6: covering; Cloning and biotechnology and Population and sustainability. Then Moving on to structured revision preparing for external exams, consolidating knowledge and understanding and building exam technique. Studying will involve understanding genome sequencing gives information about the location of genes and provides evidence for the evolutionary links between organisms. Genetic engineering involves the manipulation of naturally occurring processes and enzymes. The capacity to manipulate genes has many potential benefits, but the implications of genetic techniques are subject to much public debate. Finally the understanding that farmers and growers exploit "natural" vegetative propagation in the production of uniform crops. Artificial clones of plants and animals can now be produced. Understanding that Biotechnology is the industrial use of living organisms (or parts of living organisms) to produce food, drugs or other product. STEAM Skills Focus - teamwork, analysis, creativity, self evaluation.

This term will be the final push to complete all course work and complete any revision to support any exams which the students may need to take. STEAM Skills Focus - Critical Thinking

Term 5

Final revision push and external exams.

This term will continue to using a series of lessons on each module where structured options are provided allowing a choice in the content and level of work. This allows flexibility in learning to ensure that the needs of all learners is being met. This provides the scaffolding and structured to develop knowledge, understanding and exam technique. This is used to prepare students for completing the A2 exams. STEAM Skills Focus - Critical Thinking

Final revision push and external exams.

Final revision push, course work completion and external exams. STEAM Skills Focus - Critical Thinking

Year 13 TERMLY CURRICULUM

English Language

English Language & Literature Combined

Sport Science

Engineering

Term 1

Complete NEA teaching. The Kite Runner, continue to read and appreciate chapters and recreative task. Unit 1 exam continuation: Paris.

NEA ProjectThe students will be focussing on their own NEA task. This is worth 60% of their overall grade.

Term 2

Language acquisition core teaching and exam skills: learning to speak. Revision of AS skills: Paper 2 language discourses - analysis. One lesson for 4 weeks on independent drafting of coursework and putting together of portfolio.

Finish teaching on The Kite Runner and text recreation. Key focus on commentary skills. Revision of Handmaid's Tale and exam technique. Start teaching on A Streetcar Named Desire. Scene analysis. Cores on exam technique and requirements.

NEA ProjectThe students will be focussing on their own NEA task. This is worth 60% of their overall grade.

Term 3

Revision and exam focus on acquisition. Speaking only. Core teaching and exam skills on language change: the discursive essay Paper 2. Paper 2 Language discourses - recreative writing.

Continue teaching on Streetcar, applying exam skills. Mock. Feedback after mock. Revision of Paris. Revision of Handmaid's tale and exam requirements.

NEA ProjectThe students will be focussing on their own NEA task. This is worth 60% of their overall grade.

Term 4

Language change skills for analysis for P2. Collection of data for exam question. Language and diversity discursive essay. Comparative skills: Paper 1 and 2.

Revision on Heaney and exam technique. Revision of Paris and Exam technique. Revision of Handmaid's and exam technique.

RevisionThe student will be focussing on their two theory exams. Unit H404 - Principles of Design Engineering and Problem solving in Design Engineering which both together is worth 40% of their overall grade.

Term 5

Revision of questions for exam papers in advance of the exam dates.

Revision of The Kite Runner and exam technique. Revision of Streetcar and exam technique