Curriculum Plan **Academic Year 2022-23**

Subject: English
Year: 13 A Level Language

	Term 1	Term 2	Term 3
	Bridging the gap: AS to A Level **Paper 3: Language Analysis** **Section A: Language Change** **Section B: Child Language Acquisition** Students will build upon what they learned at Y12 and begin to develop their analytical skills towards specific research areas and prepare for University-level study. They will engage with an extensive and wide range of content, theories and theorists. They will learn to analyse the linguistic concepts, methods and approaches of spoken language and how we develop language from a very young age. Students will learn to analyse transcripts and respond to it effectively. They will also need to be familiar with the following terminology: • N-gram graph • Corpus Data • Substratum Theory • Random Fluctuation Theory • Functional Theory • Cultural Transmission Theory • Imitation and Reinforcement Theory • Investigative journalism • Language acquisition device	**Paper 4: Language Topics** **Section A: English in the World** **Section B: Language and the Self** For the final examined unit in the A Level, students will be expected to use their understanding to engage in discussion on two issues: • English as a global language • How language contributes to the construction of self Students will focus heavily on how the English language is used around the world. The given text you will explore might take the form of either • News article • Blogs • Online comment posts • Editorials Students will be expected to make links between wider research, implementing theories and studies specific to unit content. Students will also familiarize themselves with how the English language relates to social identity and the sense of self. They will also need to be familiar with the following terminology: • The Saphir- Whorf hypothesis • Language of thought hypothesis • Communication accommodation theory	**Review Sessions/ Study Leave** Students use this time to focus on what is required for the exam. This will range from: • Review sessions in class • Using their coursework effectively to self-study • A variety of past practice papers • Learning to make effective use of time. All practice papers will be marked in class and the students will be given opportunity to revise their answers in order to create models. During study leave, students are encouraged to maintain diligence towards their chosen academic subject whilst regularly communicating with their teacher.

	• Cognitive Development Theory		
Assessment	• End of Unit Tests • Practice Papers • Extended Writing (in class/ homework) • Coursework • Mock Exam	• End of Unit Tests • Practice Papers • Extended Writing (in class/ homework) • Coursework • Mock Exam	• 2nd Mock Exam / External Exam • Self-study • Practice Papers

Curriculum Plan **Academic Year 2022-23**

Subject: A2 Biology **Year**: 13
Exam Board: Cambridge International Examinations (CIE) **Syllabus Code**: 9700

	Term 1	Term 2	Term 3
	Energy and respiration Energy Respiration **Photosynthesis** Photosynthesis as an energy transfer process Investigation of limiting Factors **Homeostasis** Homeostasis in mammals Homeostasis in plants	**Control and coordination** Control and coordination in mammals Control and coordination in plants **Inheritance** Passage of information from parents to offspring The roles of genes in determining the phenotype Gene control **Selection and evolution** **Variation** Natural and artificial selection Evolution	**Classification, biodiversity and conservation** Classification Biodiversity Conservation **Genetic technology** **Principles of genetic technology** Genetic technology applied to medicine Genetically modified organisms in agriculture **Exam Revision**
Assessment	End of Unit Tests, Exam based questions Practice Papers	End of Unit Tests, Exam based questions Practice Papers	End of Unit Tests, Exam based questions Practice Papers

Curriculum Plan

Academic Year 2022-23:

Subject: A-level Business
Exam Board: CIE Cambridge

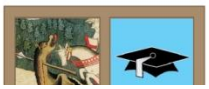
Year: 13
Syllabus Code: 9609

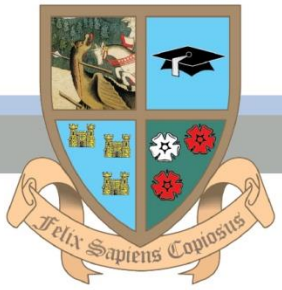
	Term 1	Term 2	Term 3
	1 Business and its environment • External influences on business activity • Business strategy **2 Human resource management** • Organisational structure Business communication Leadership • Human resource management strategy	**3 Marketing** • Marketing analysis • Marketing strategy **4 Operations management** • Location and scale • Quality management • Operations strategy	**5 Finance and accounting** • Financial statements • Analysis of published accounts • Investment appraisal • Finance and accounting strategy **6 Exam Practice and Revision**
Assessment	• End of Unit Tests • Past/Specimen Papers and Mark Schemes	• End of Unit Test/ Mock Exam • Past/Specimen Papers and Mark Schemes	• 2nd Mock Exam / External Exam/s • Past/Specimen Papers and Mark Schemes

Curriculum Plan **Academic Year 2022-23**

Subject: A2 Chemistry **Year**: 13
Exam Board: Cambridge International Examinations (CIE) **Syllabus Code**: 9701

	Term 1	Term 2	Term 3
	Physical chemistry • Chemical energetics • Electrochemistry • Equilibria • Reaction kinetics **Inorganic chemistry** • Group 2 • Chemistry of transition elements	**Organic chemistry** • An introduction to A Level organic chemistry • Hydrocarbons • Halogen compounds • Hydroxy compounds • Carboxylic acids and derivatives • Nitrogen compounds • Polymerisation • Organic synthesis	**Analysis** • Analytical techniques **Exam Revision**
Assessment	End of Unit Tests, Exam based questions Practice Papers	End of Unit Tests, Exam based questions Practice Papers	End of Unit Tests, Exam based questions Practice Papers





BRITANNICA INTERNATIONAL SCHOOL, SHANGHAI

Curriculum Plan **Academic Year 2022-23**

Subject: A Level IT

Year: Year 13

	Term 1	Term 2	Term 3
	Emerging technologies: • describe emerging technologies • 3D printing. • 4G. • 5G cellular communications. • Artificial intelligence. • Augmented reality. • Biometrics. • Cloud computing. • QR. • Wearables.	**Graphics creation:** • Vector images. • Bitmap images • Layers. • Gradients. • Filters. • Masking. • Opacity. • Compression. • Image editing on society.	**Exam Prep**
	Role and impact of IT in society: • E-business. • Social networking. • Video conferencing and teleworking. • Technology in society. • Technology enhanced learning.	**Animation:** • Stop Frame Animation. • Tweening. • Morphing. • Objects. • Text. • Masking layers.	**Exam Prep**
	Networks: • Network components. • Network security. • Satellite Communication Systems.	**Mail merge:** • Master document. • Source Files. • Variable fields. • Why mail merge documents are created.	**Exam Prep**
	Project management:	**Programming for the web:**	**Exam Prep**

	• Stages in project management. • Types of project management. • Project management software. • Critical path analysis. • Gantt charts. • Disaster recovery management. • Prototyping. • CAD/CAM	• Number, string, Boolean, array. • Assign variables. • • Basic string manipulation. • Arrays. • Logical operators. • Conditional statements. • Loops. • Functions. • Create html forms. • JavaScript code. • Output/display data. • Interactive webpages. • JavaScript terms. • Programming techniques.	
	System life cycle: • Analysis. • Design. • Development and testing. • Implementation. • Documentation. • Evaluation and maintenance.		
Assessment	End of Unit Tests	End of Unit Test/ Mock Exam	2nd Mock Exam / External Exam

BRITANNICA INTERNATIONAL SCHOOL, SHANGHAI

Curriculum Plan **Academic Year 2022-23**

Subject: Media Studies **Year**: 13
Exam Board: Cambridge **Syllabus Code**: 9607

	Term 1	Term 2	Term 3
	Advanced Portfolio Students learn a more advanced range of film making techniques, as well as the conventions of promotional material. Students will then create a digital coursework project. • **Create and maintain a working blog** • **Music video codes and conventions** • **Music promotion techniques and conventions** • **Documentary film codes and conventions** • **Short film codes and conventions** • **Film trailer codes and conventions** • **Key methods of promotion** • **Social media** • **Evaluative essay writing**	**Media Ecology and Debates** Students begin to learn a range of abstract ideas surrounding media debates and media ecology. • **Media Regulation** • **Postmodernism** • **Power and media** • **Media Ecology** • **Understanding and applying a range of media theories** • **Essay writing**	**Essay Writing and Revision** Students develop a clear understanding of how to write in the analytical style, as well as the discursive style, and revise key concepts from the year.
Assessment	• End of Unit Tests • Multiple Choice Quizzes • Presenting creations • Weekly blog checks	• End of Unit Test/ Mock Exam • Multiple Choice Quizzes • Extended Writing	• 2nd Mock Exam / External Exam • Multiple Choice Quizzes • Extended Writing

BRITANNICA INTERNATIONAL SCHOOL, SHANGHAI

Curriculum Plan - Academic Year 2022-23

Subject: Physics
Exam Board: CIE

Year: 13
Syllabus Code: 9702

	Term 1	Term 2	Term 3
	Circular Motion 12.1 Kinematics of Uniform 12.2 Centripetal Acceleration Gravitational Fields 13.1 Gravitational fields 13.2 Gravitational force between point masses 13.3 Gravitational field of a point mass 13.4 Gravitational potential Oscillations 17.1 Simple harmonic oscillations 17.2 Energy in simple harmonic motion 17.3 Damped and forced oscillations, resonance Communication systems 7.4 Electromagnetic spectrum Thermal Physics 14.3 Specific heat capacity and specific latent heat 15.1 The mole 15.2 Equation of state Ideal gases 15.3 Kinetic theory of gases	Magnetic fields and electromagnetism 20.1 Concept of a magnetic field 20.4 Magnetic fields due to currents 20.2 Force on a current-carrying conductor 20.3 Force on a moving charge 20.5 Electromagnetic induction 21.1 Characteristics of alternating current 21.2 Rectification and smoothing Charged particles 18.1 Electric fields and field lines 18.2 Uniform electric fields 18.3 Electric force between point charges 18.4 Electric field of a point charge 18.5 Electric potential Electromagnetic Induction 20.1 Concept of a magnetic field	Medical Imaging 24.1 Production and use of ultrasound 24.2 Production and use of X-rays 24.3 PET scanning Revision

	16.1 Internal energy 16.2 The first law of thermodynamics Coulomb's Law 18.3 Electric force between point charges 18.4 Electric field of a point charge Capacitance 19.1 Capacitors and capacitance 19.2 Energy stored in a capacitor	20.4 Magnetic fields due to currents 20.2 Force on a current-carrying conductor 20.3 Force on a moving charge Alternating current 20.5 Electromagnetic induction Alternating current 21.1 Characteristics of alternating current 21.2 Rectification and smoothing Quantum Physics 22.1 Energy and momentum of a photon 22.2 Photoelectric effect 22.3 Wave-particle duality 22.4 Energy levels in atoms and line spectra Nuclear Physics 11.1 Atoms, nuclei and radiation 23.2 Radioactive decay 11.2 Fundamental particles 23.1 Mass defect and nuclear binding energy	
Assessment	End of Unit Assessments Mock Examination	End of Unit Assessments Mock Examination	End of Unit Assessments Mock Examination

Term	Week Beg.	Topic	Learning Objectives
1	29th August (2 days)	Circular Motion 12.1 Kinematics of uniform circular motion	12.1.1 Define the radian and express angular displacement in radians. 12.1.2 Understand and use the concept of angular speed. 12.1.3 Recall and use ω = 2π/T and v = rω.
	5th September	Circular Motion 12.2 Centripetal acceleration	12.2.1 Understand that a force of constant magnitude that is always perpendicular to the direction of motion causes centripetal acceleration. 12.2.2 Understand that centripetal acceleration causes circular motion with a constant angular speed. 12.2.3 Recall and use a = rω2 and a = v2 / r. 12.2.4 Recall and use F = mrω2 and F = mv2 / r.
	12th September	Gravitational Fields 13.1 Gravitational fields 13.2 Gravitational force between point masses 13.3 Gravitational field of a point mass 13.4 Gravitational potential	13.4.1 Define gravitational potential at a point as the work done per unit mass in bringing a small test mass from infinity to the point. 13.4.2 Use φ = –GM / r for the gravitational potential in the field due to a point mass. 13.4.3 Understand how the concept of gravitational potential leads to the gravitational potential energy of two point masses and use EP = –GMm / r.
	19th September	Oscillations 17.1 Simple harmonic oscillations 17.2 Energy in simple harmonic motion	17.1.1 Understand and use the terms displacement, amplitude, period, frequency, angular frequency and phase difference in the context of oscillations, and express the period in terms of both frequency and angular frequency. 17.1.2 Understand that simple harmonic motion occurs when acceleration is proportional to displacement from a fixed point and in the opposite direction. 17.1.3 Use a = –ω2x and recall and use, as a solution to this equation, x = x0 sin ωt. 17.1.4 Use the equations v = v0 cos ωt and v = ± ω (x0 2 – x2). 17.1.5 Analyse and interpret graphical representations of the variations of displacement, velocity and acceleration for simple harmonic motion.

			17.2.1 Describe the interchange between kinetic and potential energy during simple harmonic motion. 17.2.2 Recall and use E = ½mω2x0 2 for the total energy of a system undergoing simple harmonic motion.
	26th September	Oscillations 17.3 Damped and forced oscillations, resonance	17.2.1 Understand that a resistive force acting on an oscillating system causes damping. 17.2.2 Understand and use the terms light, critical and heavy damping and sketch displacement–time graphs illustrating these types of damping. 17.2.3 Understand that resonance involves a maximum amplitude of oscillations and that this occurs when an oscillating system is forced to oscillate at its natural frequency.
	3rd October	**HOLIDAY**	
	10th October	Communication systems 7.4 Electromagnetic spectrum	7.4.1 State that all electromagnetic waves are transverse waves that travel with the same speed c in free space. 7.4.2 Recall the approximate range of wavelengths in free space of the principal regions of the electromagnetic spectrum from radio waves to γ-rays.
	17th October	Thermal Physics 14.1 Thermal equilibrium 14.2 Temperature scales	14.1.1 Understand that (thermal) energy is transferred from a region of higher temperature to a region of lower temperature. 14.1.2 Understand that regions of equal temperature are in thermal equilibrium. 14.2.1 Understand that a physical property that varies with temperature may be used for the measurement of temperature and state examples of such properties. 14.2.2 Understand that the scale of thermodynamic temperature does not depend on the property of any particular substance. 14.2.3 Convert temperatures between kelvin and degrees Celsius and recall that T / K = θ / °C + 273.15. 14.2.4 Understand that the lowest possible temperature is zero kelvin on the thermodynamic temperature scale and that this is known as absolute zero.
	24th October	Thermal Physics 14.3 Specific heat capacity and specific latent heat 15.1 The mole 15.2 Equation of state	14.3.1 Define and use specific heat capacity. 14.3.2 Define and use specific latent heat and distinguish between specific latent heat of fusion and specific latent heat of vaporisation. 15.1.1 Understand that amount of substance is an SI base quantity with the base unit mol. 15.1.2 Use molar quantities where one mole of any substance is the amount containing a

			number of particles of that substance equal to the Avogadro constant NA. 15.2.1 Understand that a gas obeying pV ∝ T, where T is the thermodynamic temperature, is known as an ideal gas. 15.2.2 Recall and use the equation of state for an ideal gas expressed as pV = nRT, where n = amount of substance (number of moles) and as pV = NkT, where N = number of molecules. 15.2.3 Recall that the Boltzmann constant k is given by k = R / NA.
	31st October	Ideal gases 15.3 Kinetic theory of gases 16.1 Internal energy 16.2 The first law of thermodynamics	15.3.1 State the basic assumptions of the kinetic theory of gases. 15.3.2 Explain how molecular movement causes the pressure exerted by a gas and derive and use the relationship pV = 1/3Nm, where is the mean-square speed. 15.3.3 Understand that the root-meansquare speed cr.m.s. is given by. 15.3.4 Compare pV = 1/3Nm with pV = NkT to deduce that the average translational kinetic energy of a molecule is 3/2 kT. 16.1.1 Understand that internal energy is determined by the state of the system and that it can be expressed as the sum of a random distribution of kinetic and potential energies associated with the molecules of a system. 16.1.2 Relate a rise in temperature of an object to an increase in its internal energy. 16.2.1 Recall and use W = pΔV for the work done when the volume of a gas changes at constant pressure and understand the difference between the work done by the gas and the work done on the gas. 16.2.2 Recall and use the first law of thermodynamics ΔU = q + W expressed in terms of the increase in internal energy, the heating of the system (energy transferred to the system by heating) and the work done on the system.
	7th November	Coulomb's Law 18.3 Electric force between point charges	18.3.1 Understand that, for a point outside a spherical conductor, the charge on the sphere may be considered to be a point charge at its centre. 18.3.2 Recall and use Coulomb's law F = Q1Q2 / (4πε0r 2) for the force between two point charges in free space.
	14th November	Coulomb's Law 18.4 Electric field of a point charge	18.4.1 Recall and use E = Q / (4πε0r 2) for the electric field strength due to a point charge in free space.

	21st November	Capacitance 19.1 Capacitors and capacitance	19.1.1 Define capacitance, as applied to both isolated spherical conductors and to parallel plate capacitors. 19.1.2 Recall and use C = Q / V. 19.1.3 Derive, using C = Q / V, formulae for the combined capacitance of capacitors in series and in parallel. 19.1.4 Use the capacitance formulae for capacitors in series and in parallel.
	28th November	Capacitance 19.2 Energy stored in a capacitor	19.2.1 Determine the electric potential energy stored in a capacitor from the area under the potential–charge graph. 19.2.2 Recall and use W = ½QV = ½CV2.
	5th December		**End of Term Exams (6 – 10)**
	12th December		**Mock Exams (11 – 13) TBD**
	19th December	**HOLIDAY**	
Term	**Week Beg.**	**Topic**	**Learning Objectives**
2	2nd January (3 days)	Magnetic fields and electromagnetism 20.1 Concept of a magnetic field 20.4 Magnetic fields due to currents	20.1.1 Understand that a magnetic field is an example of a field of force produced either by moving charges or by permanent magnets. 20.1.2 Represent a magnetic field by field lines. 20.4.1 Sketch magnetic field patterns due to the currents in a long straight wire, a flat circular coil and a long solenoid. 20.4.2 Understand that the magnetic field due to the current in a solenoid is increased by a ferrous core. 20.4.3 Explain the origin of the forces between currentcarrying conductors and determine the direction of the forces.
	9th January	Magnetic fields and electromagnetism 20.2 Force on a current-carrying conductor 20.3 Force on a moving charge	20.2.1 Understand that a force might act on a current-carrying conductor placed in a magnetic field. 20.2.2 Recall and use the equation F = BIL sin θ, with directions as interpreted by Fleming's left-hand rule. 20.2.3 Define magnetic flux density as the force acting per unit current per unit length on a wire placed at rightangles to the magnetic field. 20.3.1 Determine the direction of the force on a charge moving in a magnetic field. 20.3.2 Recall and use F = BQv sin θ. 20.3.3 Understand the origin of the Hall voltage and derive and use the expression VH = BI / (ntq), where t = thickness. 20.3.4 Understand the use of a Hall probe to measure magnetic flux density.

			20.3.5 Describe the motion of a charged particle moving in a uniform magnetic field perpendicular to the direction of motion of the particle. 20.3.6 Explain how electric and magnetic fields can be used in velocity selection.
	16th January	Magnetic fields and electromagnetism 20.5 Electromagnetic induction 21.1 Characteristics of alternating current 21.2 Rectification and smoothing	20.5.1 Define magnetic flux as the product of the magnetic flux density and the crosssectional area perpendicular to the direction of the magnetic flux density. 20.5.2 Recall and use Φ = BA. 20.5.3 Understand and use the concept of magnetic flux linkage. 20.5.4 Understand and explain experiments that demonstrate: • that a changing magnetic flux can induce an e.m.f. in a circuit • that the induced e.m.f. is in such a direction as to oppose the change producing it the factors affecting the magnitude of the induced e.m.f. 20.5.5 Recall and use Faraday's and Lenz's laws of electromagnetic induction. 21.1.1 Understand and use the terms period, frequency and peak value as applied to an alternating current or voltage. 21.1.2 Use equations of the form x = x0 sin ωt representing a sinusoidally alternating current or voltage. 21.1.3 Recall and use the fact that the mean power in a resistive load is half the maximum power for a sinusoidal alternating current. 21.1.4 Distinguish between root-meansquare (r.m.s.) and peak values and recall and use Ir.m.s. = I0 / √2 and Vr.m.s. = V0 / √2 for a sinusoidal alternating current. 21.2.1 Distinguish graphically between half-wave and fullwave rectification. 21.2.2 Explain the use of a single diode for the half-wave rectification of an alternating current. 21.2.3 Explain the use of four diodes (bridge rectifier) for the full-wave rectification of an alternating current. 21.2.4 Analyse the effect of a single capacitor in smoothing, including the effect of the values of capacitance and the load resistance.
	23rd January	**HOLIDAY**	
	30th January (3 days)	Charged particles 18.1 Electric fields and field lines 18.2 Uniform electric fields	18.1.1 Understand that an electric field is an example of a field of force and define electric field as force per unit positive charge. 18.1.2 Recall and use F = qE for the force on a charge in an electric field. 18.1.3 Represent an electric field by means of field lines. 18.2.1 Recall and use E = ΔV / Δd to calculate the field

		18.3 Electric force between point charges 18.4 Electric field of a point charge 18.5 Electric potential	strength of the uniform field between charged parallel plates. 18.2.2 Describe the effect of a uniform electric field on the motion of charged particles. 18.3.1 Understand that, for a point outside a spherical conductor, the charge on the sphere may be considered to be a point charge at its centre. 18.3.2 Recall and use Coulomb's law F = Q1Q2 / (4πε0r 2) for the force between two point charges in free space. 18.4.1 Recall and use E = Q / (4πε0r 2) for the electric field strength due to a point charge in free space. 18.5.1 Define electric potential at a point as the work done per unit positive charge in bringing a small test charge from infinity to the point. 18.5.2 Recall and use the fact that the electric field at a point is equal to the negative of potential gradient at that point. 18.5.3 Use V = Q / (4πε0r) for the electric potential in the field due to a point charge. 18.5.4 Understand how the concept of electric potential leads to the electric potential energy of two point charges and use EP = Qq / (4πε0r).
	6th February	Electromagnetic Induction 20.1 Concept of a magnetic field 20.4 Magnetic fields due to currents	20.1.1 Understand that a magnetic field is an example of a field of force produced either by moving charges or by permanent magnets. 20.1.2 Represent a magnetic field by field lines. 20.4.1 Sketch magnetic field patterns due to the currents in a long straight wire, a flat circular coil and a long solenoid. 20.4.2 Understand that the magnetic field due to the current in a solenoid is increased by a ferrous core. 20.4.3 Explain the origin of the forces between currentcarrying conductors and determine the direction of the forces.
	13th February	Electromagnetic Induction 20.2 Force on a current-carrying conductor 20.3 Force on a moving charge	20.2.1 Understand that a force might act on a current-carrying conductor placed in a magnetic field. 20.2.2 Recall and use the equation F = BIL sin θ, with directions as interpreted by Fleming's left-hand rule. 20.2.3 Define magnetic flux density as the force acting per unit current per unit length on a wire placed at rightangles to the magnetic field. 20.3.1 Determine the direction of the force on a charge moving in a magnetic field. 20.3.2 Recall and use F = BQv sin θ. 20.3.3 Understand the origin of the Hall voltage and derive and use the expression VH = BI / (ntq), where t = thickness. 20.3.4 Understand the use of a Hall probe to

			measure magnetic flux density. 20.3.5 Describe the motion of a charged particle moving in a uniform magnetic field perpendicular to the direction of motion of the particle. 20.3.6 Explain how electric and magnetic fields can be used in velocity selection.
	20th February	Alternating current 20.5 Electromagnetic induction	20.5.1 Define magnetic flux as the product of the magnetic flux density and the crosssectional area perpendicular to the direction of the magnetic flux density. 20.5.2 Recall and use Φ = BA. 20.5.3 Understand and use the concept of magnetic flux linkage. 20.5.4 Understand and explain experiments that demonstrate: • that a changing magnetic flux can induce an e.m.f. in a circuit • that the induced e.m.f. is in such a direction as to oppose the change producing it • the factors affecting the magnitude of the induced e.m.f. 20.5.5 Recall and use Faraday's and Lenz's laws of electromagnetic induction.
	27th February	Alternating current 21.1 Characteristics of alternating current 21.2 Rectification and smoothing	21.1.1 Understand and use the terms period, frequency and peak value as applied to an alternating current or voltage. 21.1.2 Use equations of the form x = x0 sin ωt representing a sinusoidally alternating current or voltage. 21.1.3 Recall and use the fact that the mean power in a resistive load is half the maximum power for a sinusoidal alternating current. 21.1.4 Distinguish between root-meansquare (r.m.s.) and peak values and recall and use Ir.m.s. = I0 / √2 and Vr.m.s. = V0 / √2 for a sinusoidal alternating current. 21.2.1 Distinguish graphically between half-wave and fullwave rectification. 21.2.2 Explain the use of a single diode for the half-wave rectification of an alternating current. 21.2.3 Explain the use of four diodes (bridge rectifier) for the full-wave rectification of an alternating current. 21.2.4 Analyse the effect of a single capacitor in smoothing, including the effect of the values of capacitance and the load resistance.
	6th March	Quantum Physics 22.1 Energy and momentum of a photon	22.1.1 Understand that electromagnetic radiation has a particulate nature. 22.1.2 Understand that a photon is a quantum of electromagnetic energy. 22.1.3 Recall and use E = hf. 22.1.4 Use the electronvolt (eV) as a unit of energy. 22.1.5 Understand that a photon has momentum and that the momentum is given by p = E

		22.2 Photoelectric effect 22.3 Wave-particle duality 22.4 Energy levels in atoms and line spectra	/ c. 22.2.1 Understand that photoelectrons may be emitted from a metal surface when it is illuminated by electromagnetic radiation. 22.2.2 Understand and use the terms threshold frequency and threshold wavelength. 22.2.3 Explain photoelectric emission in terms of photon energy and work function energy. 22.2.4 Recall and use hf = Φ + ½ mvmax2. 22.2.5 Explain why the maximum kinetic energy of photoelectrons is independent of intensity, whereas the photoelectric current is proportional to intensity. 22.3.1 Understand that the photoelectric effect provides evidence for a particulate nature of electromagnetic radiation while phenomena such as interference and diffraction provide evidence for a wave nature. 22.3.2 Describe and interpret qualitatively the evidence provided by electron diffraction for the wave nature of particles. 22.3.3 Understand the de Broglie wavelength as the wavelength associated with a moving particle. 22.3.4 Recall and use λ = h / p. 22.4.1 Understand that there are discrete electron energy levels in isolated atoms. 22.4.2 Understand the appearance and formation of emission and absorption line spectra. 22.4.3 Recall and use hf = E1 – E2.
	13th March	Nuclear Physics 11.1 Atoms, nuclei and radiation 23.2 Radioactive decay 11.2 Fundamental particles 23.1 Mass defect and nuclear binding energy	11.1.1 Infer from the results of the αparticle scattering experiment the existence and small size of the nucleus. 11.1.2 Describe a simple model for the nuclear atom to include protons, neutrons and orbital electrons. 11.1.3 Distinguish between nucleon number and proton number. 11.1.4 Understand that isotopes are forms of the same element with different numbers of neutrons in their nuclei. 11.1.5 Understand and use the notation $ZZXXAA$ for the representation of nuclides. 11.1.6 Understand that nucleon number and charge are conserved in nuclear processes. 11.1.7 Describe the composition, mass and charge of α-, βand γ-radiations. 11.1.8 Understand that an antiparticle has the same mass but opposite charge to the corresponding particle, and that a positron is the antiparticle of an electron. 11.1.9 State that (electron) antineutrinos are produced during β– decay and (electron) neutrinos are produced during β+ decay.

			11.1.10 Understand that α-particles have discrete energies but that β-particles have a continuous range of energies because (anti)neutrinos are emitted in β-decay. 11.1.11 Represent α and β-decay by a radioactive decay equation of the form 92UU 238 → 90$TT\hbar$ 234 + 2$\alpha\alpha$4 . 11.1.12 Use the unified atomic mass unit (u) as a unit of mass. 23.2.1 Understand that fluctuations in count rate provide evidence for the random nature of radioactive decay. 23.2.2 Understand that radioactive decay is both spontaneous and random. 23.2.3 Define activity and decay constant, and recall and use A = λN. 23.2.4 Define halflife. 23.2.5 Use λ = 0.693 / t1/2. 23.2.6 Understand the exponential nature of radioactive decay, and sketch and use the relationship x = x0e-λt, where x could represent activity, number of undecayed nuclei or received count rate. 11.2.1 Understand that a quark is a fundamental particle and that there are six flavours (types) of quark: up, down, strange, charm, top and bottom. 11.2.2 Recall and use the charge of each flavour of quark and understand that its respective antiquark has the opposite charge. 11.2.3 Recall that protons and neutrons are not fundamental particles and describe protons and neutrons in terms of their quark composition. 11.2.4 Understand that a hadron may be either a baryon (consisting of three quarks) or a meson (consisting of one quark and one antiquark). 11.2.5 Describe the changes to quark composition that take place during β– and β+ decay. 11.2.6 Recall that electrons and neutrinos are fundamental particles called leptons. 23.1.1 Understand the equivalence between energy and mass as represented by E = mc2 and recall and use this equation. 23.1.2 Represent simple nuclear reactions by nuclear equations of the form 7NN14 + 2$HHHH$ 4 → 8OO17 + 1HH1 . 23.1.3 Define and use the terms mass defect and binding energy. 23.1.4 Sketch the variation of binding energy per nucleon with nucleon number. 23.1.5 Explain what is meant by nuclear fusion and nuclear fission. 23.1.6 Explain the relevance of binding energy per nucleon to nuclear reactions, including nuclear fusion and nuclear fission.

			23.1.7 Calculate the energy released in nuclear reactions using E = c2Δm.
	20th March		**End of Term Exams (6 – 10)**
	27th March	Medical Imaging 24.1 Production and use of ultrasound 24.2 Production and use of X-rays 24.3 PET scanning	24.1.1 Understand that a piezo-electric crystal changes shape when a p.d. is applied across it and that the crystal generates an e.m.f. when its shape changes. 24.1.2 Understand how ultrasound waves are generated and detected by a piezoelectric transducer. 24.1.3 Understand how the reflection of pulses of ultrasound at boundaries between tissues can be used to obtain diagnostic information about internal structures. 24.1.4 Define the specific acoustic impedance of a medium as Z = ρc, where c is the speed of sound in the medium. 24.1.5 Use IR / I0 = (Z1 – Z1) 2 / (Z1 + Z1) 2 for the intensity reflection coefficient of a boundary between two media. 24.1.6 Recall and use I = I0e-μx for the attenuation of ultrasound in matter. 24.2.1 Explain that X-rays are produced by electron bombardment of a metal target and calculate the minimum wavelength of X-rays produced from the accelerating p.d. 24.2.2 Understand the use of X-rays in imaging internal body structures, including an understanding of the term contrast in X-ray imaging. 24.2.3 Recall and use I = I0e-μx for the attenuation of X-rays in matter. 24.2.4 Understand that computed tomography (CT) scanning produces a 3D image of an internal structure by first combining multiple X-ray images taken in the same section from different angles to obtain a 2D image of the section, then repeating this process along an axis and combining 2D images of multiple sections. 24.3.1 Understand that a tracer is a substance containing radioactive nuclei that can be introduced into the body and is then absorbed by the tissue being studied. 24.3.2 Recall that a tracer that decays by β+ decay is used in positron emission tomography. 24.3.3 Understand that annihilation occurs when a particle interacts with its antiparticle and that mass-energy and momentum are conserved in the process. 24.3.4 Explain that, in PET scanning, positrons emitted by the decay of the tracer annihilate when they interact with electrons in the tissue, producing a pair of gamma-ray photons travelling in

			opposite directions. 24.3.5 Calculate the energy of the gamma-ray photons emitted during the annihilation of an electron-positron pair. 24.3.6 Understand that the gamma-ray photons from an annihilation event travel outside the body and can be detected, and an image of the tracer concentration in the tissue can be created by processing the arrival times of the gamma-ray photons.
	3rd April	**HOLIDAY**	
Term	**Week Beg.**	**Topic**	**Learning Objectives**
3	10th April		
	17th April		**Mock Exams (11 – 13) TBD**
	24th April	**Review**	
	1st May		
	8th May		
	15th May		
	22nd May		
	29th May		
	5th June		
	12th June		**End of Year Exams (6 – 10)**
	19th June (3 days)		

Curriculum Plan **Academic Year 2022-23**

Subject: Mathematics **Year**: 13
Exam Board: Edexcel International A Level **Syllabus Code**:

	Term 1	Term 2	Term 3
	Pure Mathematics 3 Functions and Graphs Trigonometric Functions Trigonometric Addition Formulae Exponentials and Logarithms Differentiation Integration Numerical Methods **Pure Mathematics 4** Proof Partial Fractions Coordinate Geometry in the (x,y) Plane Binomial Expansion Differentiation	**Pure Mathematics 4 (cont)** Integration Vectors **Decision Mathematics 1** Algorithms Graphs and Networks Algorithms on Graphs Route Inspection Travelling Salesman Critical Path Analysis Linear Programming	**Review and Revision for final examinations**
Assessment	End of topic assessments and the first mock examination (P3)	End of topic assessments and assessed past papers	Second set of formal mock examination, assessed past papers and the P3, P4, D1 A Level examinations

Curriculum Plan **Academic Year 2022-23**

Subject: Art & Design **Year**: 13
Exam Board: CIE **Syllabus Code**: 9479

	Term 1	Term 2	Term 3
	The students will revisit the coursework started in the previous year and start on Component 3 (Personal Investigation) developing written and practical work.	Students continue with Component 3(Personal Investigation) developing written and practical work.	Students continue with Component 3(Personal Investigation) and prepare for the final assessment of their coursework. By now the student should have a clear understanding of the assessment objectives.
Assessment	Component 3 IGCSE A level	Component 3 IGCSE A level	Select and present work ready to submit to Cambridge

BRITANNICA INTERNATIONAL SCHOOL, SHANGHAI

Curriculum Plan

Academic Year 2022-23:

Subject: History
Exam Board: Edexcel

Year: 13
Syllabus Code: 9HI0

	Term 1	Term 2	Term 3
	Paper 4: • Changing attitudes to witchcraft • Wider intellectual context of Age of Science and Reason • North Berwick witches • Lancashire witches • Great Witch-Hunt in Bamberg • Matthew Hopkins and the East Anglia witch-hunt • Cotton Mather and the Salem witch-hunt	Final draft and submission of coursework. Revision: • Review • Past Papers	Revision: • Review • Past Papers
Assessment	Paper 1 and 2 mock exams.	Final draft and submission of coursework; paper 1, 2 and 4 mock exams.	Paper 1, 2 and 4 mock exams.

Curriculum Plan

Academic Year 2022-23:

Subject: Psychology
Exam Board: Cambridge

Year: 13
Syllabus Code: 9990

	Term 1	Term 2	Term 3
	Psychological Disorders • Schizophrenic and psychotic disorders • Bipolar and related disorders • Impulse control disorders and non-substance addictive disorders • Anxiety disorders • Obsessive - compulsive and related disorders	**Consumer Psychology** • The physical environment • The psychological • Environment • Consumer decision-making • The product • Advertising	**Revision** • Paper 3 • Paper 4
Assessment	Unit Tests Mock Exam	Unit Tests Mock Exam	A Level Examination Papers 3 & 4

BRITANNICA INTERNATIONAL SCHOOL, SHANGHAI

Curriculum Plan Academic Year 2022-2023

Subject: Physical Education

Year: 12 & 13 (Core PE)

Year Group	Term 1	Term 2	Term 3
12 &13 Core PE	**Block 1** **Invasion Games** • Keeping possession (dribbling, passing, receiving). • Attacking play. • Defensive play. • Scoring. • Rules and Regulations. • Tactics. **Block 2** **Health Related Exercise** • Fitness testing protocols and performance. • Warm up and cool down. • Principles and Methods of Training. • Aerobic and anaerobic energy systems.	**Block 3** **Swimming** • Stroke development (freestyle, breastroke, backstroke, butterfly). • Diving and other entry methods. • Water safety and personal survival. • Threading water and float creation with clothes. **Block 4** **Net/Wall** • Overhead and underarm clear. • Smash, drop-shot, drive. • Serve (long, short, flick). • Tactical game play, shot selection and movement around the court.	**Block 5** **Athletics** • Short and long-distance running events. • Relay races, baton changeover within the boundaries. • Long Jump and High Jump. • Shot put. • Discus. **Block 6** **Striking and Fielding** • Batting/hitting. • Bowling/pitching. • Throwing and catching. • Fielding. • Back stop. • Base play.
Assessment	Teacher Observations Peer-Assessment Self-Assessment Video Analysis	Teacher Observations Peer-Assessment Self-Assessment Video Analysis	Teacher Observations Peer-Assessment Self-Assessment Video Analysis