Physics					
		Syllabus point (text abridged)	Boardworks presentations		
			GCSE Science	Additional Science	Separate Sciences
P1(a)	Topic 9 — Producing and Measuring Electricity	Distinguish between the two types of current (alternating and direct) (P1 a 9.1)	Mains Electricity		
		Describe sources of direct current, including batteries and solar cells (P1 a 9.2)	Mains Electricity		
		Describe how to produce an electric current by rotating a magnet in a coil of wire, as in a dynamo (P1 a 9.3)	Electricity to the Home		
		Describe the factors that affect the size and direction of an induced voltage (P1 a 9.4)		Electric Circuits	Controlling Current and Voltage
		Explain how changing the resistance in a circuit changes the current (P1 a 9.5)	Mains Electricity		
		Describe how the resistance of a light-dependent resistor (LDR) changes with light intensity, and the resistance of a thermistor changes with a change of temperature (P1 a 9.6)		Resistance and Resistors	Logic Gates
		Recognise and explain applications depending on resistance change, such as controlling how long the shutter should be open on a digital camera (P1 a 9.7)		Resistance and Resistors	Logic Gates
		Explain that current is a rate of flow of negatively charged electrons and that it can be measured by an ammeter placed in series in a circuit (P1 a 9.8)	Mains Electricity	Electric Circuits	
		Interpret a battery's stated capacity in terms of Amp-hours and use it to predict the number of hours it should last when supplying a given current (P1 a 9.9)			
		Use primary data to explain how current varies with voltage for fixed value resistors and filament lamps and how this can be investigated experimentally (P1 a 9.10)		Resistance and Resistors	
		Use the relationship between the voltage, current and resistance: $V = I \times R$ (P1 a 9.11)		Resistance and Resistors	
		Investigate practically, or otherwise, the voltage and current output, and advantages/disadvantages of battery technology (dry cell or rechargeable), including considerations of their cost/performance and impact on the environment (P1 a 9.12)			
		Discuss the impact that the electric telephone and electricity has had on making the modern world (P1 a 9.13)			
		Higher tier only ***Explore how a new technology, such as Maglev trains, develops as a result of scientific advances, such as the discovery of superconductivity (P1 a 9.14)***			

		Use data relating the size of electric circuits to the processing speed of computers and suggest future applications (P1 a 9.15)			
		Demonstrate an understanding of how ICT can be used to collect and display data from electric circuits for analysis, and compare this with traditional methods in terms of reliability and validity of data (P1 a 9.16)			

		Physics			
		Syllabus point (text abridged)	Boardworks presentations		
			GCSE Science	Additional Science	Separate Sciences
P1(a)	Topic 10 — You're in Charge	Evaluate whether renewable energies such as solar power and wind power, can meet the UK's future electricity needs, and evaluate their economic, environmental and social impact (P1 a 10.1)	**Renewable Energy –Solar and Thermal, Renewable Energy –Wind and Water**		
		Higher tier only ***Consider the benefits and drawbacks when deciding about implementing technology, such as a new national grid for distribution of electricity (P1 a 10.2)***			
		Higher tier only ***Explore how scientific ideas change over time in context of the medical uses of electricity, real and imagined (P1 a 10.3)***			
		Explain how a simple electric motor works (P1 a 10.4)		**Motors and Generators**	
		Explain the concept of electrical power as the rate of transfer of electrical energy (P1 a 10.5)	**Electricity to the Home**		
		Use the equation to calculate electrical power: Power = Current × Voltage (P1 a 10.6)	**Electricity to the Home**		
		Use the term 'efficiency' to be able to find efficiency from: useful output ÷ total input × 100% and recall this equation (P1 a 10.7)	**Energy Efficiency**		
		Higher tier only ***Interpret data about the efficiency of solar cells and suggest why they are not yet in widespread use (P1 a 10.8)***			
		Use the equation to calculate the cost of electricity: cost = power × time × cost of 1kWh where power is measured in kilowatts and time is measured in hours (P1 a 10.9)	**Electricity to the Home**		
		Plan a way to test whether an energy efficiency measure, such as insulating a home, is cost effective (P1 a 10.10)	**Energy Efficiency, Heat loss and Insulation**		
		Explain how the earth wire, together with a fuse, provides protection for the user (P1 a 10.11)	**Electrical Safety**		
		Higher tier only ***Describe the advantages of a residual current circuit breaker (RCCB) (P1 a 10.12)***	**Mains Electricity**		

		Physics			
		Syllabus point (text abridged)	Boardworks presentations		
			GCSE Science	Additional Science	Separate Sciences
P1(b)	Topic 11 — Now You See it, Now You Don't	Discuss the evidence that microwave radiation from mobile phones or masts poses health risks (P1 b 11.1)	**Radio Waves and Microwaves**		
		Discuss the characteristics of ultraviolet light in terms of amplitude (P1 b 11.2)			
		Describe the detrimental effects of excessive exposure to the following waves ***(higher tier only) and explain this in terms of increasing frequency***: – microwaves: internal heating of body tissue – infrared: skin burns – X-rays and gamma-rays: mutation or destruction of cells in the body (P1 b 11.3)	**Electromagnetic Waves** **Ionizing Radiation**		
		Use primary or secondary data to describe how differences in density of materials will cause waves to be reflected/refracted (P1 b 11.4)			
		Explain how scanning by reflection can be used for the following applications: – ultrasound: scanning a fetus during pregnancy – optical: iris recognition – discuss the advantages/disadvantages of such technology (P1 b 11.5)			**Waves**
		Explain how scanning by absorption enables: – X-rays to see bone fractures – microwaves to monitor rain – ultraviolet light to detect forged bank notes by fluorescence (P1 b 11.6)	**Ionizing Radiation**		
		Explain how scanning by emission enables the use of infrared sensors to monitor temperature (P1 b 11.7)	**Infrared and Visible Waves**		
		Higher tier only ***Discuss the benefits and drawbacks to society of a technology that is based on the properties of waves (P1 b 11.8)***			
		Describe the advantages of sending information in the form of a digital signal compared with analogue (P1 b 11.9)	**Digital Communications**		
		Discuss how the production of digital signals has created a range of music technologies, including synthesised instruments, and altered the way we listen to and distribute music (P1 b 11.10)			

		Physics			
		Syllabus point (text abridged)	Boardworks presentations		
			GCSE Science	Additional Science	Separate Sciences
P1(b)	Topic 11 — Now You See it, Now You Don't	Describe how the property of total internal reflection of light waves allows optical fibres to transfer large amounts of information over long distances (P1 b 11.11)	**Digital Communications** **Infrared and Visible Waves**		
		Describe the similarities and differences between longitudinal and transverse waves, giving examples of each type, including sound waves, ultrasound, seismic waves and electromagnetic waves (P1 b 11.12)	**Wave Properties**		
		Higher tier only ***Suggest reasons why scientists find it difficult to predict earthquakes and tsunami waves, given appropriate data (P1 b 11.13)***			
		Explain the terms: – amplitude – frequency – wavelength – speed of a wave (P1 b 11.14)	**Wave Properties**		
		Use the relationship: speed = frequency × wavelength (P1 b 11.15)	**Wave Properties**		
		Use the equation: speed = distance/time to calculate the distance to a reflecting surface if the time for the reflected wave to return is known (P1 b 11.16)			
		Higher tier only ***Use data about seismic waves passing through the Earth to draw conclusions about the types of materials that are found in the planet's interior (P1 b 11.17)***			
		Describe how similarities and differences of waves can be represented in the electromagnetic spectrum (P1 b 11.18)	**Electromagnetic Waves**		
		Recall that electromagnetic waves all travel at the same speed in a vacuum (P1 b 11.19)	**Electromagnetic Waves**		

		Physics			
		Syllabus point (text abridged)	Boardworks presentations		
			GCSE Science	Additional Science	Separate Sciences
P1(b)	Topic 12 — Space and its Mysteries	Describe conditions in interplanetary space in terms of atmosphere, temperature and weightlessness due to lack of gravity (P1 b 12.1)	Gravity and Space		
		Higher tier only ***Describe how these conditions can be partly allowed for in spacecraft, including supply of air, heating/cooling, artificial gravity, exercise machines, etc (P1 b 12.2)***			
		Explain the difference between mass and weight (P1 b 12.3)	Gravity and Space		
		Use the equation: weight = mass × acceleration of free-fall W = mg (P1 b 12.4)	Gravity and Space		
		Explain how a spacecraft might be powered in terms of action and reaction (P1 b 12.5)			
		Describe how force = mass × acceleration can be used to predict how an object behaves (P1 b 12.6)		Laws of Motion	
		Higher tier only ***Discuss the possible social and economic benefits of knowledge about the universe and the technological advances which might accrue from its exploration (P1 b 12.7)***			
		Describe ways of discovering information about the universe other than humans travelling there, including soil experiments on landers (Viking/NASA Spirit and Opportunity rovers) and Search for Extraterrestrial Intelligence (SETI) (P1 b 12.8)	Gravity and Space		
		Discuss how scientists are devising ways to overcome the problems of long space flights, including the deterioration of bones and the heart, and the dangers of radiation (P1 b 12.9)			
		Explain the role of gravity both on Earth and in astronomy, ***(higher tier only) including the idea of black holes*** (P1 b 12.10)	Gravity and Space The Universe		
		Use the unit of gravitational field strength – Newton per kilogram (N/kg) (P1 b 12.11)	Gravity and Space		
		Describe stellar evolution from the nebula stage for small stars, like our Sun and for more massive stars (P1 b 12.12)	The Universe		Stars
		Discuss the risks of a global catastrophe such as a comet hitting the Earth, taking into account the consequences, the chance of it occurring and any uncertainties (P1 b 12.13)	Gravity and Space		
		Describe how the orbit of a comet differs from that of a planet or an asteroid (P1 b 12.14)	The Universe		

		Use data sources to compare the relative sizes of and distances between Earth, our Moon, the planets, the Sun, galaxies and the universe (P1 b 12.15)	**The Universe**		
		Show an understanding of how data-logging and remote sensing can provide information about the universe without us travelling there (P1 b 12.16)			
		Describe the solar system as part of the Milky Way galaxy and discuss how this is related to other galaxies and the universe (P1 b 12.17)	**The Universe**		
		Higher tier only ***Discuss and develop an argument for and against the idea that intelligent life exists elsewhere in the galaxy, using scientific evidence, and propose ways to find such life (P1 b 12.18)***	**Gravity and Space**		
		Be able to recognise that there are scientific questions which remain unanswered, such as the existence of extraterrestrial life and the ***(higher tier only) nature of 'dark matter' that makes up much of the universe's mass*** (P1 b 12.19)			
		Describe the origin, current state and fate of the universe using the main theories (Big Bang, oscillating and steady state); ***(higher tier only) and explain the supporting evidence for these theories, including microwaves and red shift*** (P1 b 12.20)	**The Universe**		
		Higher tier only ***Describe how the existence of life on a planet is determined by the position of the planet in its solar system and the position of its star in its life-cycle (P1 b 12.21)***			

		Physics			
		Syllabus point (text abridged)	Boardworks presentations		
			GCSE Science	Additional Science	Separate Sciences
P2	Topic 9 — As Fast as You Can!	Explain that velocity is speed in a given direction and is a vector quantity (P2 9.1)		**Speed and Acceleration**	
		Define acceleration in terms of a change in velocity (this can mean change in magnitude and/or direction) and the time taken for the change (P2 9.2)		**Speed and Acceleration**	
		Draw and interpret velocity time graphs and determine acceleration from the gradient of the graph (P2 9.3)		**Speed and Acceleration**	
		Use the equation: average velocity = displacement/time ($v = s/t$) (P2 9.4)			**Forces and Motion**
		Use the equation: acceleration = change in velocity/time ($a = (v - u)/t$) (P2 9.5)		**Speed and Acceleration**	
		Explain that if the resultant force acting on a body is zero, it will remain at rest or continue to move at the same speed in the same direction (P2 9.6)		**Laws of Motion**	
		Explain that if the resultant force acting on a body is not zero, it will accelerate in the direction of the resultant force (P2 9.7)		**Laws of Motion**	
		Calculate a resultant force using a range of forces (limited to the resultant of forces acting along a line) including resistive forces (P2 9.8)		**Laws of Motion**	
		Use the equation: force = mass × acceleration ($F = ma$) (P2 9.9)		**Laws of Motion**	
		Explain that when two bodies interact, the forces they exert on each other are equal and opposite and that these are known as action and reaction forces (P2 9.10)		**Laws of Motion**	
		Draw and interpret a free-body force diagram (P2 9.11)			
		Demonstrate an understanding of how data about forces can be collected to be incorporated into spreadsheet software and then used to model 'what if' situations (P2 9.12)			
		Explain that falling objects are acted on by a downward force (weight) and an upward force (resistance) and that at the start of the fall the forces are unbalanced and the object accelerates (P2 9.13)		**Laws of Motion**	
		Higher tier only ***Discuss, when an object falls through the atmosphere or other gas, resistance increasing with increasing speed and this may become equal in size to the weight of the falling object, which is when terminal velocity is reached (P2 9.14)***		**Laws of Motion**	

		Present an argument to explain how the stopping distance of a vehicle depends on the speed of travel (P2 9.15)		**Speed and Acceleration**	
		Discuss the impact of factors such as driver's reaction time and the condition of the vehicle and road, on stopping distance (P2 9.16)		**Speed and Acceleration**	
		Higher tier only ***Calculate the momentum of an object using the equation: momentum = mass × velocity (P2 9.17)***		**Momentum**	**Forces and motion**
		Higher tier only ***Explain how vehicles and theme park rides are designed to absorb momentum in collisions to reduce injury to passengers (P2 9.18)***		**Momentum**	
		Assess the effectiveness of safety technology when travelling, including safety belts/harnesses, crumple zones and airbags, to prevent injury, when provided with appropriate data (P2 9.19)		**Momentum**	
		Interpret and translate between different ways of expressing the size of a risk (P2 9.20)			
		Be aware of the factors that influence people's willingness to accept risks, including the degree of familiarity and whether it is imposed or voluntary (P2 9.21)			

	Physics				
		Syllabus point (text abridged)	Boardworks presentations		
			GCSE Science	Additional Science	Separate Sciences
P2	Topic 10 — Roller Coasters and Relativity	Use the relationship: potential energy transferred = mass × acceleration of free-fall × change in height (P2 10.1)			
		Use the relationship: kinetic energy = ½ × mass × (velocity)^2 (P2 10.2)		**Energy and Movement**	
		Apply the equation to situations that use electric motors: electrical energy = voltage × current × time (P2 10.3)			
		Explain that work done is equal to energy transferred (P2 10.4)		**Work and Power**	
		Use the equation: power = work done/time taken (P2 10.5)		**Work and Power**	
		Use the equation: work done = force × distance moved in the direction of the force (P2 10.6)		**Work and Power**	
		Apply the principle of conservation of energy to examples involving gravitational potential energy, kinetic energy and other forms of energy (P2 10.7)		**Energy and Movement**	
		Describe how a roller coaster or other ride works, using concepts such as speed, acceleration, force and energy (P2 10.8)		**Energy and Movement**	
		Higher tier only ***Explain that an object moving in a circle at constant speed must be accelerating due to its direction changing (P2 10.9)***			**Turning Effects**
		Higher tier only ***Explain that there must be a resultant force acting on an object which is moving in a circle in order to bring about this acceleration (P2 10.10)***			**Turning Effects**
		Higher tier only ***Apply the fact that a force is directed to the centre of the circle, e.g. by drawing diagrams (P2 10.11)***			**Turning Effects**
		Recognise that some theories, such as Einstein's theory of relativity, require creative imagination such as thought experiments, and do not emerge from experimental data automatically (P2 10.12)			
		Discuss the fact that some scientists are often reluctant to accept new theories, such as Einstein's relativity, when they overturn long-established explanations (P2 10.13)			
		Higher tier only ***Explain that Einstein's theory of relativity is believed because it led to predictions which were tested successfully in different situations, such as atomic clocks and cosmic rays. (P2 10.14)***			

		Physics			
		Syllabus point (text abridged)	Boardworks presentations		
			GCSE Science	Additional Science	Separate Sciences
P2	Topic 11 — Putting Radiation to Use	Describe how radioactivity is used in household fire (smoke) alarms and for treating food so it keeps longer (P2 11.1)		**Radioactive Decay**	
		Explain that X-rays and gamma rays have similar properties, including their ionising abilities, but are emitted from different sources (P2 11.2)	**Ionizing Radiation**		
		Describe the uses of radioactivity in medical applications for both diagnosis and treatment for patients and also for sterilisation of equipment (P2 11.3)	**Ionizing Radiation**		
		Describe the nature of each of the ionising radiations and compare their abilities to penetrate and to ionise (P2 11.4)	**Ionizing Radiation**	**Radioactive Decay**	
		Describe the structure of an atom in terms of protons, neutrons and electrons and describe particular nuclei using symbols in the format: X_{mp} (P2 11.5)		**Atomic Structure** (*GCSE Additional Chemistry*)	
		Higher tier only ***Use the terms atomic (proton) number and mass (nucleon) number to explain the existence of isotopes (P2 11.6)***		**Atomic Structure** (*GCSE Additional Chemistry*)	
		Higher tier only ***Explain that alpha and beta particles and gamma rays are ionising radiations emitted from unstable nuclei in a random process (P2 11.7)***		**Radioactive Decay**	
		Describe how the activity of a radioactive source decreases over a period of time (P2 11.8)		**Radioactive Decay**	
		Use the concept of half-life to carry out simple calculations, including graphical representations (P2 11.9)		**Radioactive Decay**	
		Demonstrate an understanding of how graphical representations of half-life can be made using suitable software, and compare this to traditional methods of creating graphical representation (P2 11.10)		**Radioactive Decay**	
		Recognise that scientific conclusion, such as those from radioactive dating, often carry significant uncertainties (P2 11.11)		**Radioactive Decay**	
		Discuss how scientific ideas, such as the risks associated with radioactive sources, develop over time (P2 11.12)	**Radioactivity**		
		Higher tier only ***Discuss the origin of the background radiation from Earth and space (P2 11.13)***	**Radioactivity**		

		Higher tier only ***Explain what is meant by the background radiation which we all experience and describe how regional variations within the UK are caused in particular by radon gas*** ***(P2 11.14)***	**Radioactivity**		
		Describe the dangers of ionising radiation in terms of tissue damage and possible mutations and relate this to the precautions taken while carrying out demonstrations at school (P2 11.15)	**Radioactivity**		
		Higher tier only ***Explain that the Earth's atmosphere and magnetic field protects it from radiation from space. (P2 11.16)***			

		Physics			
		Syllabus point (text abridged)	Boardworks presentations		
			GCSE Science	Additional Science	Separate Sciences
P2	Topic 12 — Power of the Atom	Explore how scientists use theories to make predictions, including how Einstein suggested the possibility of releasing enormous amounts of energy trapped in an atom from his relation between mass and energy (P2 12.1)			
		Explain the principle of a chain reaction (P2 12.2)		**Nuclear Energy**	
		Describe the fission of U-235 to produce two daughter nuclei and two neutrons (P2 12.3)		**Nuclear Energy**	
		Higher tier only ***Describe a simple decay series starting from the daughter products of U-235 (P2 12.4)***		**Nuclear Energy**	
		Explain how a chain reaction can be used for both peaceful and destructive purposes (P2 12.5)		**Nuclear Energy**	
		Explain how the chain reaction is controlled in a nuclear reactor (P2 12.6)		**Nuclear Energy**	
		Discuss the benefits and drawbacks of nuclear power for generating electricity, including carbon dioxide emissions and safety issues (P2 12.7)		**Nuclear Energy**	
		Describe the environmental and social impact of a nuclear power station on a locality (P2 12.8)			
		Describe how thermal energy from the chain reaction is transferred to electrical energy in a nuclear power station (P2 12.9)		**Nuclear Energy**	
		Explain that the products of nuclear fission are radioactive and discuss the long-term possibilities for storage/disposal of nuclear waste (P2 12.10)	**Non-renewable Energy Resources**	**Nuclear Energy**	
		Higher tier only ***Understand that nuclear fusion requires extremely high temperatures and densities, and relate this to the difficulty of making a practical form of power (P2 12.11)***		**Nuclear Energy**	
		Higher tier only ***Describe how fusion differs from fission and recognise it as the energy source for stars (P2 12.12)***		**Nuclear Energy**	
		Appreciate that new scientific theories, such as 'cold fusion', are not accepted until they have been validated by the scientific community (P2 12.13)			

		Explain common electrostatic phenomena in terms of the movement of electrons, including shocks and earthing – examples include shocks from car doors, charges on synthetic fibres and lightning (P2 12.14)		**Static Electricity**	
		Describe the forces that act between like charges (repulsive) and unlike charges (attractive) (P2 12.15)		**Static Electricity**	

		Physics			
		Syllabus point (text abridged)	Boardworks presentations		
			GCSE Science	Additional Science	Separate Sciences
P3	Topic 5 — Particles in Action	The term absolute zero, −273°C, in terms of the lack of movement of particles (P3 5.1)			
		Be able to convert between the Kelvin and Celsius scales (P3 5.2)			
		The effect of changing the temperature of a gas on the speed of its particles (P3 5.3)	**Heat Transfer**		
		Relate the Kelvin temperature of a gas to the average kinetic energy of particles (direct proportionality) (P3 5.4)			
		The pressure of a gas in terms of the motion of its particles (P3 5.5)			
		Use the equation for a gas in a sealed container, the ratio: Pressure/Temperature (Kelvin) = constant P/T = constant (P3 5.6)			
		Use the equation: P1V1/T1 = P2V2/T2 (P3 5.7)			
		Nuclei contain protons and neutrons and that neutrons are difficult to detect because they are neutral (P3 5.8)		**Atomic Structure** (*GCSE Additional Chemistry*)	
		The properties of alpha, beta, gamma, positron, and neutron radiation (P3 5.9)	**Radioactivity**	**Radioactive Decay**	
		The qualitative features of the curve obtained when the number of neutrons (N) is plotted against the number of protons (Z) for stable isotopes (P3 5.10)			
		Identify radioactive isotopes from the fact that if an isotope does not lie on this curve it will be unstable and radioactive (P3 5.11)			
		An isotope that lies above the curve has too many neutrons to be stable and will undergo β- decay (P3 5.12)			
		Process of β- decay (a neutron becomes a proton plus an electron) (P3 5.13)	**Radioactivity**		
		An isotope that lies below the curve has too few neutrons to be stable and will undergo β+ decay (emit a positron) (P3 5.14)			
		The process of β+ decay (a proton becomes a neutron plus a positron) (P3 5.15)			

Nuclei with more than 82 protons usually undergo α decay (P3 5.16)				
As a result of β^- or β^+ decay nuclei undergo rearrangement with a loss of energy as gamma radiation (P3 5.17)				
The effects on the proton number (atomic number) and mass number of the nuclei of α, β^- and β^+ and gamma decay (P3 5.18)				
Construct simple nuclear equations for alpha, beta and gamma decay from supplied nuclear data. (P3 5.19)				
What is meant by a fundamental particle and give examples, including the electron and positron (P3 5.20)				
The properties of a positron (positively charged particle with the same mass as the electron) (P3 5.21)				
How scientists are creating fundamental particles, such as anti-matter (P3 5.22)				
Proton and neutron are not fundamental particles because each contain three particles called quarks (P3 5.23)				
Account for the number of *up* and *down* quarks in protons and in neutrons in terms of charge and mass (P3 5.24)				
β^- decay as a process that involves a down quark changing into an up quark (P3 5.25)				
β^+ decay as a process that involves one up quark changing into a down quark (P3 5.26)				
Electrons are 'boiled off' hot metal filaments and this is called thermionic emission (P3 5.27)				
Production of a beam of electrons using a electron gun with a heated cathode and an accelerating anode (P3 5.28)				
Use the equation: kinetic energy = electronic charge × accelerating voltage $KE = e \times V$ (P3 5.29)				
That a beam of electrons is equivalent to an electric current and calculate current in terms of the rate of flow of electrons, given the electronic charge (P3 5.30)				
How an electron beam, or a stream of charged particles (for example ink drops), can be deflected by the electric field between parallel charged metal plates and explain the factors which affect the amount of deflection (P3 5.31)				
The principal uses of electron beams, including TV picture tubes, computer monitors, oscilloscopes and the production of X-rays (P3 5.32)				
How instruments, such as particle accelerators, can help scientists develop better explanations (P3 5.33)				
The reasons for collaborative, international research into big scientific questions, such as particle physics. (P3 5.34)				

		Physics			
		Syllabus point (text abridged)	Boardworks presentations		
			GCSE Science	Additional Science	Separate Sciences
P3	Topic 6 — Medical Physics	What is meant by refraction in transverse and longitudinal waves (P3 6.1)			**Reflection and Refraction**
		Use the word 'radiation' to describe any form of energy, e.g. wave or particle originating from a source (P3 6.2)			
		Reflection, total internal reflection and absorption of radiation and its application in medical physics (P3 6.3)			**Reflection and Refraction**
		Optical fibres and use of endoscopes (P3 6.4)	**Infrared and Visible Waves**		
		The principles and use of pulse oximetry (P3 6.5)			
		Work done is equal to energy transferred (P3 6.6)		**Work and Power**	
		Use the equation: work done = force × distance moved in the direction of the force $W = F \times s$ (P3 6.7)		**Work and Power**	
		Use the equation: power = work done/time taken $P = W/t$ (P3 6.8)		**Work and Power**	
		Basal metabolic rate (BMR) (P3 6.9)			
		Use the equation: frequency = 1/time period $f = 1/T$ (P3 6.10)			
		Medical applications of muscle cell potential differences (P3 6.11)			
		Action potentials can be measured with an electrocardiogram (ECG) to monitor heart action (P36.12)			**The Heart** (*GCSE Separate Sciences Biology*)
		The characteristic shape of a normal ECG in terms of heart action (P3 6.13)			**The Heart** (*GCSE Separate Science Biology*)
		The term intensity and use the equation: intensity = power of incident radiation/area (P3 6.14)			
		The intensity of radiation will decrease with distance from a source and according to the nature of the medium through which it is travelling (P3 6.15)	**Radioactivity**		
		Balancing nuclear equations that use thermal neutrons (P3 6.16)			
		Perform calculations on energy conservation and momentum conservation for collisions in one dimension (P3 6.17)			

		The bombardment of certain stable elements with proton radiation to make them into radioactive isotopes that usually emit positrons (P3 6.18)		**Nuclear Energy**	
		Production of gamma rays by annihilation of electron and positron (P3 6.19)			
		Annihilation of electron and positron to form gamma rays as an example of momentum and mass energy conservation (P3 6.20)			
		Use of positron emission tomography (PET) scanning (P3 6.21)			
		The dangers of ionising radiation in terms of tissue damage and possible mutations. Relate this to the precautions taken to ensure the safety of medical personnel and to limiting the dose of radiation (P3 6.22)	**Ionizing Radiation**		
		Treatment of tumours using radiation (P3 6.23)	**Ionizing Radiation**		
		Use of radiation in palliative care (P3 6.24)			
		Social and ethical issues relating to the use of (new/newer) techniques in medical physics. (P3 6.25)			