Calendar	Big Question/Theme	Small Questions	Assessment Opportunities and Criteria. Teacher feedback point (TFP)	Homework
Autumn 1 Year 12 Chapter 2	What are the mathematical skills required to be successful with A-level Physics?	1. What are physical units for physical quantities? 2. How do units relate to a Physics equation? 3. What is meant by a base unit? 4. Define scalar and vector quantities. 5. Give examples of scalar and vector quantities. 6. How can vectors be combined? 7. How can vectors be resolved? 8. How can Pythagoras's theorem be applied to resolving vectors at angles? 9. How do you apply trigonometry to a angled vector(s)? 10. What are the functions of rearranging algebra and physics equations?	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

Calendar	**Big Question/Theme**	**Small Questions**	**Assessment Opportunities and Criteria. Teacher feedback point (TFP)**	**Homework**
Autumn 1 Year 12 Chapter 3	How can the motion of a moving object be determined?	1. What is the vector equivalent for distance and speed? 2. Define vector quantities: displacement, velocity and- acceleration. 3. What and how are the SUVAT equations use? 4. How are negative quantities used to describe motion? 5. What is meant by a negative motion vector? 6. What are represented by the gradients of motion graphs: d/t or v/t? 7. How are the SUVAT equations derived? 8. What are the factors of thinking, braking and stopping distance? 9. What are the factors for thinking/braking distance? 10. How can *g* be determined experimentally? 11. How does acceleration of a projectile differ horizontally and vertically? 12. How does the angle of a projectiles launch affect its horizonal and vertical motion?	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Autumn 1 Year 12 Chapter 4	How do forces change the motion of objects?	1. How are force, mass and acceleration related? 2. Define the Newton. 3. Write the Newton is SI base units. 4. Define weight. 5. Define centre of mass. 6. How can the centre of mass be found experimentally? 7. What is the purpose of a free-body diagram? 8. Define what is meant by terminal velocity. 9. How can the moment be found of a rotating system? 10. Describe mathematically multiple moments in equilibrium. 11. Describe the moments and motion of a system with torque. 12. Resolve forces using vector triangle diagrams. 13. Define density. 14. Describe how density of an object can be determined experimentally. 15. What is Archimedes' principle? 16. How does density and depth affect pressure vary in fluids?	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Autumn 1 Year 12 Chapter 5	How is energy transferred and transformed in different systems?	1. Define work done. 2. Define the Joule. 3. How is work done affected by the angle of an applied force? 4. What is the law of conservation of energy? 5. What are the 10 types of energy? 6. How is kinetic energy affected by mass/velocity of an object? 7. How is GPE affected by mass and height? 8. How can KE and GPE be exchanged and unified? 9. Define the Watt. 10. How can the power of a moving object be calculated? 11. What affects the efficiency and how can it be improved in different systems? 12. Why can the efficiency of a system never exceed 100%?	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Autumn 2 Year 12 Chapter 6	How can the properties of different materials be described and investigated.	1. Define the spring constant of a spring. 2. What is Hooke's Law? 3. When does Hooke's Law apply to a stretched object? 4. When is Hooke's Law not applied? 5. How can the spring constant of a material be determined experimentally? 6. How is elastic potential energy related to force, extension and the spring constant? 7. Describe how energy changes and is exchanged in a stretched object from GPE/KE. 8. Why do elastic materials transfer less energy when being unloaded compared to the elastic energy when being loaded? 9. Describe the pattern of a loaded elastic, brittle and ductile material. 10. What is meant by young's modulus? 11. How can the young's modulus be determined experimentally for different materials? 12. How is the stress/strain graph used to describe the elasticity of a material?	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Autumn 2 Year 12 Chapter 7	What determines the forces and momentums within collisions?	1. What is Newton's 1st Law of motion? 2. What is Newton's 2nd Law of motion? 3. What is Newton's 3rd Law of motion? 4. How do different fields interact? 5. Define linear momentum in its base units. 6. How is momentum related to mass and velocity? 7. Apply the conservation of momentum to a changing system e.g. collision. 8. Explain that Newton's second law is the rate of change of momentum. 9. Apply Newton's 2nd law to a collision. 10. Analyse an impulse from a F/t graph. 11. What does the area under a F/t graph represent? 12. How can a collision in 2 dimensions be resolved to describe momentum of objects.	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Autumn 2 /Spring 1 Year 12 Chapter 8	How does charge interact with different types of conductors?	1. Define the Coulomb. 2. Define electrical current. 3. Relate electrical current to charge. 4. Explain how different change pairs interact. 5. Describe the similarities of electrical current and electron flow. 6. Describe the differences between electrical current and electron flow. 7. Explain how electrons move through a metallic conductor. 8. Define Kirchhoff's first law. 9. Explain how charge and current changes at a junction in a circuit. 10. Explain how to determine the mean drift velocity of electrons through a conductor. 11. State what is meant by the electron number density of a conductor. 12. Analyse conductors, semiconductors and insulators in terms on electron number density	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Spring 1 /Spring 2 Year 12 Chapter 9	How can circuits be experimentally designed and investigated?	1. Recall the basic circuit symbols. 2. Define the volt. 3. Describe what is meant by electromotive force and potential difference. 4. State the similarity between p.d. and e.m.f. 5. State a difference between p.d. and e.m.f. 6. Explain how the velocity of an electron is affected by the accelerating potential difference. 7. Relate the kinetic energy and electrical energy of an emitted electron from a hot filament in an electron gun. 8. Define the Ohm. 9. Relate the resistance of a component to the current flowing through it and the potential difference across the component. 10. Define Ohm's law and its conditions. 11. Explain how temperature affects mean drift velocity. 12. Describe the I/V characteristics of filament lamps, resistors, wires and diodes. 13. Explain the use of diodes in simple circuits. 14. Define resistivity and its factors. 15. Describe how a thermistor affects the current of a circuit from its temperature. 16. Describe how a LDR affects the current of a circuit from light intensity. 17. How can the power of an appliance be calculated?	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Spring 2 Year 12 Chapter 10	How can resistance be used to manipulate the current and potential difference across components in a circuit?	1. Define Kirchhoff's 2nd law. 2. Describe how current works in series and parallel circuits. 3. Describe how p.d. works in series and parallel circuits. 4. Explain how resistance changes when combining resistors in series. 5. Explain how resistance changes when combining resistors in parallel. 6. Describe how internal resistance affects e.m.f. 7. Relate terminal p.d. and lost volts to e.m.f. 8. Explain experimentally how internal resistance can be determined from a battery. 9. Describe the use of potential divider circuits. 10. Apply Kirchhoff's law to a potential divider circuit. 11. Explain how a potential divider circuit can be used in sensing circuits for light intensity and temperature. 12. Describe the use of a variable resistor in a potential divider circuit.	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Spring 2 Year 12 Chapter 11	How can waves be explained from their different interactions with matter.	1. What is meant by a transverse wave? 2. What is meant by a longitudinal wave? 3. Describe the similarities and differences between transverse and longitudinal waves. 4. Define the terms: displacement, amplitude, wavelength, period, frequency and wave speed with units. 5. Graphically analyse progressive waves. 6. Define what is meant by phase difference between waves. 7. Experimentally describe how waves can analysed. 8. Explain how a wave can be reflected. 9. Explain how a wave can be refracted. 10. Explain how a wave can be diffracted. 11. What is meant by polarisation of a wave? 12. Apply an inverse square law to the intensity of light. 13. Describe the electromagnetic spectrum. 14. Explain how EM waves are polarised. 15. Explain the effect of refection index and how a wave is internally reflected.	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Spring 2 Year 12 Chapter 12	Ho do waves interact with each other?	1. What is meant by superposition of waves? 2. Relate the phase difference to the interference of waves. 3. When does constructive interference occur? 4. When does destructive interference occur? 5. Describe the maxima and minima of an interference pattern. 6. Relate the path difference to the maxima and minima. 7. Experimentally explain how waves can be superposed and the interference pattern variables. 8. Describe the process of Young's double slit experiment. 9. Explain how the wavelength of monochromatic light can be found. 10. Describe how a stationary wave can be formed. 11. Experimentally describe how microwaves can be used to create a stationary wave. 12. Describe the harmonic patterns of stationary waves. 13. Explain how stationary waves are formed in air columns using sound waves.	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Summer 1 Year 12 Chapter 13	How can electrons and waves be related to describe wave-particle duality of particles.	1. Define what a photon is. 2. How is the energy of a photon related to its wavelength and frequency? 3. Experimentally explain how the threshold p.d. can be used to determine Planck's constant. 4. How does the threshold p.d., of an LED change with the emitted photon's wavelength and frequency? 5. What is the photoelectric effect? 6. What is meant by the threshold frequency of a metal? 7. What is meant by the work function of a metal? 8. How does the kinetic energy of an emitted electron relate to the incident photon's wavelength and frequency? 9. What is meant by wave-particle duality? 10. How can the de Broglie wavelength of an electron be determined? 11. How is velocity of an electron related to the de Broglie wavelength of the electron? 12. How is Kinetic energy of an electron related to the de Broglie wavelength of the electron?	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Autumn 1 Year 13 Chapter 14	How does the kinetic model of matter explain how thermal energy corresponds to the motion of particles within matter?	1. Define thermal equilibrium in terms of energy transfer, recalling the zeroth law of thermodynamics. 2. Explain the use of an absolute temperature scale. 3. Convert Celsius to Kelvin. 4. Describe the kinetic models of solids, liquids and gases. 5. Explain what Brownian motion describes about particle theory. 6. Explain how the internal energy of a system changes during a change of state. 7. Experimentally describe how to determine the specific heat capacity of a material. 8. Define the terms specific latent heat of fusion and latent heat of vaporisation. 9. Analyse the cooling/heating curves to determine latent heat of fusion/vaporisation.	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Autumn 1 Year 13 Chapter 15	How can the kinetic particle theory of be applied to larger systems?	1. Define the mole. 2. Relate the number of molecules to Avogadro's number. 3. Define what is meant by an ideal gas. 4. Explain the assumptions made for the kinetic model of an ideal gas. 5. Recall and explain Boyle's law for pressure and volume. 6. Explain the assumption and conditions for Boyle's to apply to an ideal gas. 7. Relate pressure and volume to temperature. 8. Describe what the root mean square speed of a particles inside a gas. 9. Relate the pressure and volume of a gas to its root mean square speed. 10. Apply the Boltzmann constant to ideal gases. 11. Describe the effect of changing temperature on the root mean square speed of an ideal gas. 12. Explain how certain energies of particles relate to the internal energy of an ideal gas.	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Autumn 2 Year 13 Chapter 16	How can the motion of a circular path be determined and explained qualitatively and quantitatively?	1. Define the radian. 2. Explain why an object moving in a circular path is accelerating, even with a constant speed. 3. Determine the angular velocity of an object. 4. Describe the forces acting on a body in circular motion. 5. Calculate the acceleration of an object with a circular path. 6. Apply Newton's 2nd Law to circular motion. 7. Explain how circular motion describes systems such as objects on strings, vehicles making a turn or planets and satellites in orbit. 8. Resolve vectors of objects which rotate around a conical pendulum.	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Autumn 2 Year 13 Chapter 17	How can the oscillatory motion of a object be described and determined?	1. What is meant by oscillating motion? 2. Define amplitude and displacement of an oscillation. 3. Calculate the angular frequency of an oscillator using either time period of frequency. 4. Define what is meant by simple harmonic motion. 5. Calculate the acceleration of a body in S.H.M. 6. Describe what an isochronous oscillator is. 7. Experimentally determine the period and frequency of an oscillator from: a pendulum; mass on a spring vertically hung. 8. Graphically analyse S.H.M from sine and cosine graphs relating correct trigonometrical equations. 9. Explain how the maximum velocity of an oscillator can be calculated. 10. Describe the energy changes of an oscillator. 11. Explain the effect of damping on an oscillator. 12. Describe the terms: over damped, critically damped and light damping. 13. Evaluate the natural frequency and damping of a forced oscillator.	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Autumn 2 Year 13 Chapter 18	Explain how properties of an orbit of an object from the object it is orbiting.	1. Describe the properties of gravitational fields. 2. Explain how the strength of a gravitational field can be determined. 3. Explain how an inverse square law applied to Newton's law of gravitation. 4. Evaluate the strength of gravitation between two masses. 5. Explain why Newton's law of gravitation includes a minus (-) sign. 6. Recall Kepler's 3 laws of planetary motion. 7. Relate the time period of a object in orbit to the radius of its orbit. 8. Derive an equation to calculate the escape velocity of an object from its planet. 9. Describe the properties of a geostationary orbit. 10. Define GPE in terms of a radial field. 11. Relate the GPE of masses to the distance between the masses. 12. Graphically analyse the effect of the mass of a planet to the escape velocity of a rocket.	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Autumn 1 Year 13 Chapter 19	How can the stars be analysed?	1. Describe the life cycle of a star relating its mass. 2. How does a main sequence star form? 3. How are elements formed within stars? 4. How are super heavy elements created? 5. Explain the balance of forces and pressures inside the cores of stars. 6. Describe how the mass affects the life cycle and death of stars. 7. Describe the characteristics of difference types of stars. 8. Explain how the H-R diagram can be used to describe the classification of stars. 9. How can the light from stars be used to determine the elemental composition of the star? 10. Explain how electron energy levels correspond to the colour(s) of light emitted and therefore emitted wavelengths and frequencies. 11. Use diffraction methods to determine the wavelength of light.	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Autumn 1 Year 13 Chapter 20	How has the universe changed since the Big Bang the evidence which supports the Big Bang Theory.	1. Define the terms: astronomical unit, light year and parsec. 2. Describe the use of parallax angles to the distance between the Sun and other stars. 3. Explain what the Doppler effect is. 4. Explain how to use star spectra to determine the relative motion of stars and galaxies. 5. Explain what red-shift and blue-shift is. 6. Explain how to approximate the velocity of a galaxy or star. 7. State Hubble's law. 8. Explain what the cosmological principle is. 9. Define the terms: homogenous and isotropic in terms of the universe. 10. Explain the evidence for the Big Bang theory. 11. Determine the age of the universe using Hubble's constant. 12. Describe the evolution of the universe.	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Autumn 2 Year 13 Chapter 21	How are capacitors used in complex circuits?	1. Define the term capacitance referring to charge and p.d. 2. Define the Farad. 3. State uses of capacitors. 4. Evaluate the effect of total capacitance with capacitors in parallel. 5. Evaluate the effect of total capacitance with capacitors in series. 6. Determine the total capacitance of a complex circuit. 7. Determine the energy stored by a capacitor. 8. Experimentally describe how to determine the exponential discharge of a capacitor. 9. Graphically analyse the charging and discharging of a capacitor. 10. Mathematically manipulate exponential equations using logarithms.	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Spring 1 Year 13 Chapter 22	How can electric field affect charge particles and other electric fields.	1. Define Coulomb's Law of electrostatic charge. 2. Define what is meant by permittivity of free space. 3. Compare electrotactic field to gravitational fields. 4. Determine the electric field between parallel plates. 5. Determine the capacitance of a of an electric field between parallel plates. 6. Describe Millikan's experiment for determine the charge of an electron. 7. Explain how an electric field is able to accelerate a charged particle. 8. Determine the electrical potential energy between charges. 9. Relate Coulomb's Law to the capacitance of an isolated sphere. 10. Apply Coulomb's Law to interacting charged particles to describe the equipotential of pairs charged particles.	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Spring 2 Year 13 Chapter 23	How can the interaction of magnetic fields be used to generate electricity?	1. Describe the field lines in a magnetic field. 2. Describe the shape of a magnetic field around a bar magnet and the Earth's magnetosphere. 3. Explain how to construct an electromagnet. 4. Apply the right-hand rule to current carrying conductors. 5. Describe the shape of a magnetic field inside a solenoid. 6. Describe the use of Fleming's left hand rule to motors. 7. Define the Tesla. 8. Evaluate the magnetic flux density of a magnetic field created using a current carrying conductor. 9. Experimentally explain how to determine the magnetic flux density around a wire. 10. Explain how charged particles interact with a magnetic field. 11. Determine the force or velocity of a charged particle within a magnetic field. 12. Describe what flux linkage is. 13. Explain the connection of Lenz's law with Faraday's law. 14. Explain how a permanent magnet can be used with a solenoid to generate an alternating current. 15. Graphically analyse the flux linkage and e.m.f of an a.c. generator is.	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Spring 1 Year 13 Chapter 24	How has the model of the atom and particles changed over time with new evidence?	1. What is the alpha scattering experiment? 2. What were the outcomes of Rutherford's experiment? 3. Apply Coulomb's law to the nucleus and an interacting alpha aprticle. 4. Describe the nuclear model of the atom. 5. Determine the size and density of the nucleus of an atom. 6. Describe the nuclear forces inside of atoms. 7. Define the particles: antiparticle, hadron and lepton. 8. Compare the 4 fundamental forces in terms of their effect, range and relative strength. 9. State the flavours of quarks and their relative charges. 10. Use the quark model to describe hadrons such as (anti)protons and (anti)neutrons. 11. State what a baryon and meson are made of. 12. Explain the decay of particles via beta decay and the neutrinos they emit. 13. Explain how quarks change to cause neutrons to form protons and vice versa.	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Spring 2 Year 13 Chapter 25	Explain how atomic nuclei decay and the uses of radioactivity.	1. Describe the properties of the different types of radioactive decay. 2. Explain how each radioactive decay particle interacts inside electric and magnetic field. 3. Compare the absorption of each decay particle and the relative size and charge. 4. Describe the changes during alpha decay within the atomic nucleus. 5. Describe the changes during beta-minus and beta-plus decay within the atomic nucleus. 6. Describe the changes during gamma decay within the atomic nucleus. 7. Use decay chains to describe how radioactive elements become stable through decay. 8. Determine the half-life of a radioactive element. 9. Describe the nature of radioactive decay. 10. Define the decay constant of an element. 11. Mathematically manipulate exponential equations using logarithms to determine half-life of an element. 12. Explain how radioactive decay can be used to date the age of bones, rocks and the Earth.	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

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Spring 2 Year 13 Chapter 26	Explain how energy can be released from atomic nuclei by splitting or fusing nuclei.	1. Relate energy and mass and the speed of light. 2. Explain how particle can annihilate each other and the product of their annihilation. 3. Explain what binding energy is. 4. Describe what mass defect is. 5. Describe the pattern of binding energy and the number of nucleons within a nucleus. 6. Explain the process of nuclear fission. 7. Describe the layout and parts of a nuclear fission reactor. 8. Calculate the energy released from a fission reaction. 9. Explain the environmental effect of radioactive waste. 10. Describe the process of nuclear fusion. 11. Explain how nuclear fusion releases energy. 12. Briefly describe how fusion can be achieved on Earth.	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.

Calendar	Big Question/Theme	Small Questions	Assessment Opportunities and Criteria. Teacher feedback point (TFP)	Homework
Spring 2 Year 13 Chapter 27	Explain the imaging techniques used for medical diagnosis.	1. Explain how X-rays are produced in a cathode tube. 2. Describe the use and benefits of X-rays in medicine. 3. Explain how X-rays interact with matter: simple scattering, photoelectric effect, Compton scattering and pair production. 4. Explain how the intensity of an X-ray varies with the attenuation coefficient of a material. 5. Explain why iodine and barium are able to give larger contrasting images based on their atomic number. 6. Explain how CAT scans are used and what they diagnose. 7. Describe how a gamma ray camera works. 8. Describe how the use of PET scans. 9. Explain the use of ultrasound in medicine. 10. Explain how acoustic impendence is used to generate contrasting images using ultrasound. 11. Explain what Doppler imaging is. 12. Explain the advantage and disadvantages of different medical imaging techniques and when they would be used.	Each Module consists of testing phases within the lessons using past exam questions for each submodule. Exam questions are obtained from Exam Builder OCR. Teacher will mark exam questions and provide a feedback to students and supply mark schemes and teacher notes on exam questions.	Homework is 40-50 marks of past exam questions as well as an Isaac Physics test online. Students homework is marked and handed back with red pen amendments. Student results will be recorded on a tracking sheet.