

Physics Double & Triple (v2022/2023)

1. Energy, 2. Electricity 3. Particle Model & States of Matter 4. Atoms & Radiation 5. Forces 6. Waves 7. Magnets 8. Space Physics

Year 10	Year 11
<p>P3.1.1 Changes of state and the particle model – Density of Materials Required practical activity 5: use appropriate apparatus to make and record the measurements needed to determine the densities of regular and irregular solid objects and liquids. Volume should be determined from the dimensions of regularly shaped objects, and by a displacement technique for irregularly shaped objects. Dimensions to be measured using appropriate apparatus such as a ruler, micrometer or Vernier callipers.</p> <p>P3.1.2 Changes of State P3.2.1 Internal energy and energy transfers – Internal Energy P3.2.2 Temperature changes in a system and specific heat capacity P3.2.3 Changes of heat and specific latent heat P3.3.1 Particle model and Pressure – Particle motion in gases</p> <p>(Triple Only) P3.3.2 Pressure in gases P3.3.3 Increasing the pressure of a gas (HT)</p>	<p>(Combined Only in Year 11) P4.1.1 Atomic Structure – The Structure of an atom P4.1.2 Mass number, atomic number and isotopes P4.1.3 The development of the model of the atom</p> <p>P4.2.1 Atoms and Nuclear radiation – Radioactive decay and Nuclear Radiation P4.2.2 Nuclear Equations P4.2.3 Half-lives and the random nature of radioactive decay P4.2.4 Radioactive contamination</p>
<p>P1.1.1 Energy stores and Systems P1.1.2 Changes in energy P1.1.3 Energy changes in systems (Required Practical 1 – Investigation to determine the specific heat capacity of one or more materials – link decrease of one energy store (or work done) to the increase in temp and subsequent increase in thermal energy stored) P1.1.4 Power</p> <p>P1.2.1 Energy transfers in a system (Required Practical 2 – Investigate the effectiveness of different materials as thermal insulators and the factors that may affect thermal insulation properties of a material – practical Physics only) P1.2.2 Efficiency</p> <p>P1.3 National and Global Energy Resources</p>	<p>P2.1.4 Resistors (Required practical 4 – using circuit diagrams to construct circuits, the I-V characteristics of a filament lamp, a diode and a resistor at constant temp) P2.3.1 Direct and alternating current P2.3.2 Mains electricity P2.4.1 Energy transfer – Power P2.4.2 Energy transfer in everyday appliances P2.4.3 The National Grid</p>
<p>P6.1.1 Waves – Transverse and longitudinal waves P6.1.2 Properties of waves (Required practical activity 8: make observations to identify the suitability of apparatus to measure the frequency, wavelength and speed of waves in a ripple tank and waves in a solid and take appropriate measurements.)</p> <p>(Triple Only) P6.1.3 Reflection of Waves (Required practical activity 9 (physics only): investigate the reflection of light by different types of surface and the refraction of light by different substances) P6.1.4 Sound Waves P6.1.5 Waves for detection and exploration</p>	<p>P6.2.1 Types of Electromagnetic Waves P6.2.2 Properties of Electromagnetic Waves 1 (Required practical 10 – Investigate how the amount of infrared radiation absorbed or radiated by a surface depends on the nature of that surface) P6.2.3 Properties of electromagnetic waves 2 P6.2.4 Uses and applications of electromagnetic waves</p> <p>(Triple Only) P6.2.5 Lenses P6.2.6 Visible Light P6.3.1 Black body radiation – Emission and Absorption of infrared radiation P6.3.2 Perfect black bodies and radiation</p>
<p>P2.1.1 Standard circuit diagram symbols P2.1.2 Electrical charge and current P2.1.3 Current, resistance and potential difference (Required practical 3a (recap) – Using circuit diagrams to set up a circuit, the factors that affect the resistance of an electrical component. This should include the length of the wire at a constant temperature) P2.1.3 Current, resistance and potential difference (Required practical 3b – Using circuit diagrams to set up a circuit, the factors that affect the resistance of an electrical component. This should include combinations of resistors in series and parallel) P2.2 Series and parallel circuits</p> <p>(Triple Only) P2.5.1 Static Electricity – Static Charge P2.5.2 Electric Fields</p>	<p>(Triple Only) P8.1.1 Space Physics – Our Solar System P8.1.2 The life cycle of a star P8.1.3 Orbital motion, natural and artificial satellites P8.2 Red-Shift</p>
<p>P5.1.1 Forces – Scalar and vector quantities P5.1.2 Contact and non-contact forces P5.1.3 Gravity P5.1.4 Resultant Forces</p> <p>P1.1.2 Changes in energy (recap) P5.2 Work Done and Energy Transfer P5.3 Forces and Elasticity (Required Practical 6 – Force and Extension of a Spring)</p> <p>(Triple Only) P5.5.1 1 Pressure in a Fluid 1 P5.5.1.2 Pressure in a Fluid 2 (HT) P5.5.2 Atmospheric Pressure P5.4 Moments, Levers and Gears</p> <p>P5.6.1.1 Describing Motion along a line – Distance and Displacement P5.6.1.2 Describing Motion along a line – Speed P5.6.1.3 Describing Motion along a line – Velocity P5.6.1.4 Describing Motion along a line – Distance – time relationship P5.6.1.5 Describing Motion along a line – Acceleration</p>	<p>P5.6.2.1 Forces, acceleration and Newton’s Laws of Motion – First Law P5.6.2.2 Newton’s Second Law (Required practical activity 7: investigate the effect of varying the force on the acceleration of an object of constant mass, and the effect of varying the mass of an object on the acceleration produced by a constant force.) P5.6.2.3 Newton’s Third Law P5.6.3.1 Forces and Braking – Stopping Distance P5.6.3.2 Forces and Braking – Reaction Time P5.6.3.3 Forces and Braking – Factors affecting braking distance 1 P5.6.3.4 Forces and Braking – Factors affecting braking distance 2</p> <p>P5.7.1 Momentum is a property of moving objects (HT) P5.7.2 Conservation of momentum (HT)</p> <p>(Triple Only) P5.7.3 Changes in momentum (HT)</p>
<p>On Triple run through only for Year 10 P4.1.1 Atomic Structure – The Structure of an atom P4.1.2 Mass number, atomic number and isotopes P4.1.3 The development of the model of the atom P4.2.1 Atoms and Nuclear radiation – Radioactive decay and Nuclear Radiation P4.2.2 Nuclear Equations P4.2.3 Half-lives and the random nature of radioactive decay P4.2.4 Radioactive contamination</p> <p>(Triple Only) P4.3.1 Hazards and uses of radioactive emissions – Background Radiation P4.3.2 Different half-lives of radioactive isotopes P4.3.3 Uses of nuclear radiation P4.4.1 Nuclear fission P4.4.2 Nuclear Fusion</p>	<p>P7.1.1 Magnetism and electromagnetism – Poles of a magnet P7.1.2 Magnetic Fields</p> <p>P7.2.1 The Motor Effect – Electromagnetism P7.2.2 Fleming’s left-hand rule (HT) P7.2.3 Electric Motors (HT)</p> <p>(Triple Only) P7.2.4 Loud Speakers (HT) P7.3.1 Induced potential, transformers and the National Grid – Induced Potential (HT) P7.3.2 Uses of the generator effect (HT) P7.3.3 Microphones P7.3.4 Transformers (HT)</p>