Physics Curriculum – Carre's Grammar School

<table>
<tr><th colspan="7">Physics</th></tr>
<tr><th></th><th colspan="2">Autumn 1</th><th colspan="2">Autumn 2</th><th colspan="2">Spring 3</th><th colspan="2">Spring 4</th><th colspan="2">Summer 5</th><th colspan="2">Summer 6</th></tr>
<tr><td rowspan="2">Year 9</td><td colspan="4">Topic 3 – The Particle Model of Matter
Using kinetic theory to explain the properties of solids, liquids and gases.
Calculating the densities of materials.
Describing the changes to the internal energy of substances when they are being heated or cooled.
Describing and explaining the relationships between temperature, pressure and volume of a gas.</td><td colspan="4">Topic 4 – Atomic structure
Describing the development of models of the atom.
Describing instability of atomic nuclei, radioactive decay and half-life.
Describing the properties of nuclear radiation.
Writing nuclear decay equations using nuclide notation.
Explaining the hazards associated with nuclear radiation.
Explaining medical uses of sources of nuclear radiation.
Comparing the processes of nuclear fission and nuclear fusion.</td><td colspan="4">Topic 1 – Energy
Describing systems, energy stores and transfers
Calculating power and efficiency.
Testing different thermal insulators to reduce heat loss in homes.
Considering the advantages and disadvantages of different energy resources used to generate electricity.
Using the law of conservation of energy in calculations involving kinetic, gravitational potential and elastic potential energy.</td></tr>
<tr><td colspan="4">Assessment
Multiple choice question quizzes (MCQs) in the middle of each term.
Formal written assessment using past exam questions covering all content covered since the beginning of Year 9 at the end of Term 1.</td><td colspan="4">Assessment
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Formal written assessment using past exam questions covering all content covered since the beginning of Year 9 at end of April/beginning of May.</td></tr>
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<tr><td rowspan="2">Year 10</td><td colspan="2">Topic 2 – Electricity
Static electricity and electric fields
Circuit symbols and diagrams.
Electrical current and potential difference.
Resistance of components and wires.
I-V characteristics
Electrical power and energy.
Mains electricity in the UK and the National Grid.</td><td colspan="3">Topic 5 – Forces
Describing motion of objects.
Types of force and free-body diagrams.
Resultant and resolving forces.
Newton's laws of motion
Weight and terminal velocity.
Conservation of momentum and impact forces.
Work done by forces.
Stopping distances
Hooke's law and deformation of materials.
Moments, levers and gears
Pressure in fluids.</td><td>Topic 7 – Electromagnetism
Permanent and induced magnets
Electromagnets
Magnetic fields
Motor effect and its applications
Generator effect and its applications
Transformers</td></tr>
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<tr><td rowspan="2">Year 11</td><td>Topic 7 – Electromagnetism
Permanent and induced magnets
Electromagnets
Magnetic fields
Motor effect and its applications
Generator effect and its applications
Transformers</td><td colspan="2">Topic 6 – Waves
Describing and measuring properties of waves
Explaining the appearance of objects by considering interactions of light with their surfaces.
Describing the emission and absorption of infrared radiation.
Describing the production, detection, properties, uses and hazards of electromagnetic waves.
Investigating reflection and refraction.
Lenses, including drawing ray diagrams and describing the properties of the images formed.
Using sound, ultrasound and seismic waves for detection and exploration.</td><td>Topic 8 – Space physics
Describing the structure of the Universe.
Describing the orbital motion of planets and satellites.
Describing the formation, lifecycle and death of stars of different masses.
Explain the Doppler Effect.
Explain the evidence for the Big Bang theory.</td><td>REVISION</td></tr>
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Mock exam paper mid-January.</td><td>Assessment
Mock exam end of April.</td></tr>
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