

Teaching Plan: Two teachers

Year 1

Teacher A

| Topic | Lessons | Practical | No. of Weeks |
|------------------------|---|--|--------------|
| Working as a Physicist | Base and SI Units Practical Skills and Techniques Physical Measurements Evaluate Benefits and Risks of Science | | 1.0 |
| Mechanics | SUVAT Equations Graphs Vectors and Components Projectiles Free-Body Force Diagrams Newton's Laws Momentum Work Power Energy Conservation Efficiency | CPAC 1 – determine the acceleration of a freely-falling object | 15.0 |
| Electric Circuits | Current and Charge Potential Difference Charge Conservation Series and Parallel Circuits Power IV Characteristics Resistance and Resistivity Drift Velocity Potential Divider E.M.F. Conduction Electrons | CPAC 2 – Determine the Electrical Resistivity of a Material CPAC 3 – Determine the e.m.f. and internal resistance of an electrical cell | 15.0 |

Teacher B

| Topic | Lessons | Practical | No. of Weeks |
|--|--|--|--------------|
| Working as a Physicist | Base and SI Units Practical Skills and Techniques Physical Measurements Evaluate Benefits and Risks of Science | | 1.0 |
| Materials | Density Upthrust and Archimedes Stokes' Law Viscosity Laminar and Turbulent Flow Hooke's Law Stress-Strain Graphs Young Modulus Elastic Potential Energy | CPAC 4 – Use a Falling-Ball Method to Determine the Viscosity of a Liquid CPAC 5 – determine the Young Modulus of a Material | 8.0 |
| Waves and the Particle Nature of Light | Waves Stationary Waves Coherence Path Difference and Phase Difference Interference and Superposition Waves on a String Intensity of Radiation Reflection Refraction Refractive Index Snell's Law Critical Angle Lenses Magnification Polarisation Diffraction Huygens' Construction Diffraction Gratings de Broglie Wave-Particle Duality Photoelectric Effect Work Function Electronvolts Line Spectra | CPAC 6 – Determine the Speed of Sound in Air Using a 2-Beam Oscilloscope, Signal Generator, Speaker and Microphone CPAC 7 – Investigate the Effects of Length, tension and Mass Per Unit Length on the Frequency of a Vibrating String or Wire CPAC 8 – Determine the Wavelength of Light From a Laser or Other Light Source Using a Diffraction Grating | 22.0 |

Year 2

Teacher A

| Topic | Lessons | Practical | No. of Weeks |
|------------------------------|--|--|--------------|
| Further Mechanics | Impulse Linear Momentum Elastic and Inelastic Collisions Angular Displacement Angular Velocity Centripetal Acceleration Centripetal Force | CPAC 9 – Investigate the Relationship Between the Force Exerted on an Object and its Change of Momentum CPAC 10 – Use ICT to Analyse Collisions Between Small Spheres | 6.0 |
| Electric and Magnetic Fields | Electric Fields Electric Field Strength Electrostatic Force Potential Parallel Plates Equipotentials Capacitance Energy Stored by a Capacitor Charge and Discharge Curves Exponential Discharge Time Constant Flux and Flux Linkage Fleming's Left Hand Rule Magnetic Forces Faraday's Law Lenz's Law Root Mean Squared Values | CPAC 11 – Use an Oscilloscope or Data Logger to display and Analyse the Potential Difference Across a Capacitor as it Charges and Discharges Through a Resistor | 16.0 |
| Nuclear and Particle Physics | Nucleon Number and Proton Number Alpha Scattering Thermionic Emission Linacs and Cyclotrons Detectors Conservation of Charge, Energy and Momentum in Interactions Creation and Annihilation MeV and GeV and MeV/c^2 and GeV/c^2 Quarks, Baryons, Mesons, Leptons and the Standard Model Antiparticles Particle Equations | | 9.0 |

Teacher B

| Topic | Lessons | Practical | No. of Weeks |
|----------------------|---|---|--------------|
| Thermodynamics | Specific Heat Capacity Specific Latent Heat Internal energy Absolute Zero and Temperature Scales Kinetic Theory Ideal Gas Equation Kinetic Energy Black Body Radiators Stefan-Boltzmann Law Wien's Law | CPAC 12 – Calibrate a Thermistor in a Potential Divider Circuit as a Thermostat CPAC 13 – Determine the Specific Latent Heat of a Phase Change CPAC 14 – Investigate the Relationship Between Pressure and Volume of a Gas at a Fixed Temperature | 7.0 |
| Space | Luminosity Trigonometric Parallax Standard Candles Hertzsprung-Russell Diagrams Doppler Effect Redshift Hubble's Law Age and Fate of Universe | | 6.0 |
| Nuclear Radiation | Nuclear Binding Energy Atomic Mass Unit Fusion and Fission Background Radiation Nuclear Equations Half-Life Radioactive Decay Equations | CPAC 15 – Investigate the Absorption of Gamma Radiation by Lead | 6.0 |
| Gravitational Fields | Gravitational Field Strength Newton's Law of Universal Gravitation Gravitational Potential Orbital Motion | | 5.0 |
| Oscillations | Simple Harmonic Motion SHM Equations SHM Graphs Resonance Damping Forced and Free Oscillations Plastic Deformation | CPAC 16 – Determine the Value of an Unknown Mass Using the Resonant Frequencies of the Oscillation of Known Masses | 7.0 |