Curriculum Outline 2024-25

Department: Physics

Year 13

Timing	Unit Title	Key Question	Knowledge		Assessing understanding
			Teacher 1	Teacher 2	
Autumn	Further Mechanics and Astrophysics Kinetic Theory Fields	What are the definitions? What is the key theory? Can I apply the theory in order to solve problems?	 Simple Harmonic Motion Pendulum Mass spring system Resonance and Stationary Waves RP7 Pendulum and Mass Spring System Gravitational Fields Newton's Law of Gravity Gravitational Field strength Gravitational Potential Planetary Fields + Satellites Coulomb's Law Electric Field Patterns Electric Field Strength: Electric Potential Point sources vs. Plates Capacitance 	 RP8: Boyle's and Charles' Laws Derivation of the ideal gas Equation Temperature Kinetic Energy relationship Optical Telescopes Single dish radio telescopes Large diameter telescopes and resolution Comparison of Eye and CCD Luminosity, Magnitude and apparent Magnitude Classification by Magnitude Classification, Wien's Law, Stefan's Law Classifications by Temperature. Stellar Spectral Classes 	How understanding is assessed Students will be assessed on their ability to: • recall the knowledge covered • explain the Physical processes covered • interpret graphical and experimental data • plan and describe valid experiments • evaluate experimental procedures and results. Skills • Description • Explanation • Evaluation • Comparison • Planning and carrying out investigations • Manipulating Mathematical Formulae Assessment point information Based on: • Home works during the term • Test on Astrophysics • Test on Further Mechanics

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Magnetic Fields and Radioactivity		 Dielectric Equation Energy Stored in a capacitor Charging and Discharging RP9 (Capacitor Charge/ Discharge) Magnetic Fields 	 HR Diagrams Star Lifecycles Neutron stars and Blackholes Doppler effect and Red Shift Hubble's Law/ CMBR/Dark Matter Quasars Exoplanets 	
EM Induction Nuclear Physics	What are the definitions? What is the key theory? Can I apply the theory in order to solve problems?	 RP:10 Force exerted by current carrying conductor BIL and BeV Flux + Flux Linkage Hall Probe EM Induction AC Generator and AC Oscilloscopes Transformer RP:11 (Hall probe/ Search Coil) 	 Rutherford Scattering Radioactivity Introduction Alpha, Beta and Gamma radiation Half value thickness exp. Inverse Square Law Radioactive Decay Half Life Half-life practical Applications of Radioactivity R P:12 Inverse Square Law of Gamma rays Segre Plot 	How understanding is assessed Students will be assessed on their ability to: • recall the knowledge covered • explain the Physical processes covered • interpret graphical and experimental data • plan and describe valid experiments • evaluate experimental procedures and results. Skills • Description • Explanation • Evaluation • Comparison • Planning and carrying out investigations • Manipulating Mathematical Formulae Assessment point information Based on: • Home works during the term • Mocks on all topics covered so far

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		 Decay modes and Decay Series Nuclear Radius Electron Diffraction Nuclear Density Binding Energy per nucleon Fission + Calculations 	Test on Capacitance and electric fields tbc
Summer Nuclea Physic	Revision	 Fission Power Station Fusion Safety in Power Stations Nuclear Waste Disposal 	How understanding is assessed Students will be assessed on their ability to: • recall the knowledge covered • explain the Physical processes covered • interpret graphical and experimental data • plan and describe valid experiments • evaluate experimental procedures and results. Skills • Description • Explanation • Evaluation • Comparison • Planning and carrying out investigations • Manipulating Mathematical Formulae Assessment point information Based on: • Possible mini mock • A Level Exams