

	Autumn Term	Spring Term	Summer Term
Year 12	<p>Curriculum:</p> <p>Teachers 1 and 2: Module 2** Foundations of Physics</p> <ul style="list-style-type: none"> • Units • Scalars and Vectors • Errors • Combining Uncertainties <p>Teacher 1: Module 3 Forces and Motion</p> <p>Topic: Forces and Motion</p> <ul style="list-style-type: none"> • Motion graphs • Kinematics (SUVATs) • Moments • Density and Pressure <p>Teacher 2: Module 4 Electrons, Waves and Photons</p> <p>Topic: Electricity</p> <ul style="list-style-type: none"> • Current, Potential Difference and Resistance • Kirchoff's Laws • Resistivity • Potential Dividers • Internal Resistance • Semiconductors (diodes, LDRs, thermistors) 	<p>Curriculum:</p> <p>Teacher 1: Module 3 Forces and Motion</p> <p>Topic: Materials and Energy</p> <ul style="list-style-type: none"> • Energy Stores and Transformations • Power and Efficiency • Hooke's Law and Elastic Materials • Stress and Strain • Young's Modulus <p>Teacher 2: Module 4 Electrons, Waves and Photons</p> <p>Topic: Waves</p> <ul style="list-style-type: none"> • Wave Properties • Phase Difference and Interference • Polarisation • Refractive Index and Total Internal Reflection • Stationary Waves • Resonance 	<p>Curriculum:</p> <p>Teacher 1: Module 3 Forces and Motion</p> <p>Topic: Momentum</p> <ul style="list-style-type: none"> • Newton's Laws • Conservation of Momentum • Elastic and Inelastic Collisions • Impulse <p>Teacher 2: Module 4 Electrons, Waves and Photons</p> <p>Topic: Quantum Physics</p> <ul style="list-style-type: none"> • Young's Double Slit Experiment • Diffraction Gratings • The Photoelectric Effect • The Photon Model of Light • Wave-Particle Duality (the de Broglie equation)
	<p>Formal Assessment*:</p> <p>Interim and end of topic tests for all units. Weekly homework set including past paper question practice. Assessed practical activities:</p> <ul style="list-style-type: none"> • Determining g in free fall with light gates • Measuring terminal velocity • Analysing circuits with several resistors • Determining the resistivity of constantan • Investigating electrical components • Determining the internal resistance of a cell 	<p>Formal Assessment*:</p> <p>Interim and end of topic tests for all units. Weekly homework set including past paper question practice. Assessed practical activities:</p> <ul style="list-style-type: none"> • Investigating systems of springs • Investigating properties of a plastic bag • Determining the Young's modulus of a wire • Determining the refractive index of materials • Analysing sound with an oscilloscope • Investigating resonance <p>First Mock Exam after Christmas Holidays</p>	<p>Formal Assessment*:</p> <p>Interim and end of topic tests for all units. Weekly homework set including past paper question practice. Assessed practical activities:</p> <ul style="list-style-type: none"> • Determining wavelength with a diffraction grating • Determining Planck's constant with LEDs <p>End of Y12 Mock Exams</p>

*At CamSF, assessment happens at many levels and is perhaps most important when teachers assess what students have learned and remembered within the classroom. Timely feedback is so important in enabling progress and knowledge retention.

**Module 1 concerns practical skills and is taught throughout the course

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Year 13	<p>Curriculum:</p> <p>Teacher 1: Module 5 Newtonian World and Astrophysics Topic: Thermal Physics</p> <ul style="list-style-type: none"> • Kelvin and Absolute Zero • Specific Heat Capacity and Specific Latent Heat • Ideal Gases • Boyle’s Law • Charles’ Law • The Maxwell-Boltzmann Distribution <p>Teacher 2: Module 6 Particles and Medical Physics Topic: Electric and Magnetic Fields</p> <ul style="list-style-type: none"> • Charging and Discharging Capacitors • Coulomb’s Law and Electrical Potential • Electric and Magnetic Field Patterns • Motor Effect and Generator Effect • Faraday’s Law and Lenz’s Law • Transformers 	<p>Curriculum:</p> <p>Teacher 1: Module 5 Newtonian World and Astrophysics Topic: Simple Harmonic Motion</p> <ul style="list-style-type: none"> • Oscillations and Angular Velocity • Circular Motion and Centripetal Forces • Simple Harmonic Motion • Damping • Resonance <p>Teacher 2: Module 6 Particles and Medical Physics Topic: Particle Physics</p> <ul style="list-style-type: none"> • Fundamental Forces • Leptons, Quarks and Hadrons • Alpha, Beta (+ and -) and Gamma Decay • Decay chains • Half Life and Exponential Decay • Mass-Energy Equivalence ($E=mc^2$) • Binding Energy • Fission and Fusion 	<p>Curriculum:</p> <p>Teacher 1: Module 5 Newtonian World and Astrophysics Topic: Space</p> <ul style="list-style-type: none"> • Gravitational Fields • Kepler’s Laws and Satellites • Life-Cycle of Stars and Hertzsprung-Russell Diagram • Absorption Spectra • Black Body Radiation • Wien’s Law and Stefan’s Law • Hubble’s Law and the Big Bang Theory • Cosmology and Dark Matter <p>Teacher 2: Module 6 Particles and Medical Physics Topic: Medical Imaging</p> <ul style="list-style-type: none"> • X-Rays and CAT scans • Gamma Camera and PET scans • Ultrasound • Doppler Imaging
	<p>Formal Assessment*: Interim and end of topic tests for all units. Weekly homework set including past paper question practice. Assessed practical activities:</p> <ul style="list-style-type: none"> • Investigating Boyle’s Law with a syringe • Investigating Charles’ Law with a capillary tube • Analysing circuits with several capacitors • Determining the capacitance of a discharging capacitor • Independent investigation into specific heat capacity • Independent investigation into the motor effect 	<p>Formal Assessment*: Interim and end of topic tests for all units. Weekly homework set including past paper question practice. Assessed practical activities:</p> <ul style="list-style-type: none"> • Determining g using an oscillating pendulum • Determining spring constant using an oscillating spring • Investigating absorption of radioactive sources • Investigating the random nature of radioactive decay <p>Y13 Mock Exams before February Half Term</p>	<p>Formal Assessment*: Interim and end of topic tests for all units. Weekly homework set including past paper question practice. Assessed practical activities:</p> <ul style="list-style-type: none"> • Research report about astrophysics or cosmology <p>Final Exams</p>

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