Curriculum Map – Applied Science – Year 13

Immanuel College
Church of England Academy

	Term 1	Term 2	Term 3
Key focus	Unit 3 – Principles and Applications of Physics: waves and optical fibres. Unit 4 – Practical Scientific Procedures and Techniques: Learning Aim C. Unit 6 – Contemporary Issues in Science: Learning Aim A.	Unit 3: forces in transportation, motion and Newton's Laws of Motion. Unit 4: Learning Aim D. Unit 6: Learning Aim B.	Unit 3: Electrical circuits and transfer of energy; revision and preparation for external assessment. Unit 6: Learning Aim C. Units 1 and 2: targeted revision and resit preparation where required.
Purpose of the scheme	Develop understanding of waves, optical fibres and communication alongside practical investigation of energy transfer and the study of contemporary scientific issues.	Develop understanding of forces and motion and apply Newton's Laws to transportation contexts while reviewing practical scientific skills and the influence of organisations on science.	Develop understanding of electrical circuits and energy transfer, consolidate Unit 3 knowledge and develop students' ability to evaluate and communicate scientific information.
Pre read (suggested)	Revisit GCSE Physics knowledge of waves and energy. Explore accessible examples of optical fibres, communication technology and contemporary science.	Review GCSE knowledge of motion, forces and energy. Consider examples of organisations influencing scientific research and practice.	Review key Physics equations and terminology. Use feedback and assessment evidence to guide targeted revision.
Key knowledge and skills	Wave properties; transverse and longitudinal waves; refraction and total internal reflection; optical fibres; electromagnetic waves and communication; practical investigation of energy transfer; contemporary scientific issues and their implications.	Speed, velocity and displacement; motion graphs; equations; forces; Newton's Laws; momentum; friction and drag; terminal velocity; transportation and safety; development and evaluation of practical scientific skills; organisations involved in contemporary science.	Electrical circuits; current, potential difference and resistance; electrical power and energy; domestic energy use; thermal energy; specific heat capacity; change of state and latent heat; evaluating sources and scientific information; communicating evidence.
Key words/ vocabulary	Waves, amplitude, frequency, wavelength, refraction, total internal reflection, optical fibre, electromagnetic spectrum, communication, energy transfer.	Displacement, distance, speed, velocity, acceleration, force, resultant force, momentum, friction, drag, terminal velocity, evaluation, evidence.	Current, potential difference, resistance, power, energy, specific heat capacity, latent heat, sustainability, evidence, peer review, bias, validity, reliability.
Exam board	Pearson level 3 BTEC		
End point	Students develop the Physics and practical foundations needed for the remainder of Year 13 and investigate contemporary scientific issues.	Students apply Physics knowledge to forces and motion and develop the practical, evaluative and research skills needed for assessment.	Students complete the relevant Unit 3 and Unit 6 learning and assessment requirements and prepare for progression beyond KS5.
Assessment method	Classroom assessment; retrieval and application; practical investigation; research and evaluation activities.	Classroom assessment; practical assessment; coursework; research and evaluation; mock/practice assessment.	Mock and practice examinations; external assessment; coursework completion; Unit 6 assessment; targeted resit preparation where required.
Wider reading / links / research	Mathematics; Engineering; telecommunications; technology; environmental science; current scientific developments.	Mathematics; Engineering; Sport; transport; automotive technology; healthcare; environmental science.	Mathematics; Engineering; energy; environmental science; science communication; current scientific research.
Careers links	Physicist; optical engineer; telecommunications engineer; renewable energy engineer; environmental scientist; laboratory technician.	Mechanical engineer; automotive engineer; transport engineer; sports scientist; physicist; environmental scientist.	Electrical engineer; energy engineer; physicist; science communicator; data analyst; research scientist; environmental scientist.