

Islip Manor High School

Scheme of Learning Overview



This scheme of learning has been designed to ensure that you make progress, develop, and master key knowledge, skills, and ideas through academically rich content that reflects, values, and celebrates the diverse experiences, identities, and contributions of our school community.

Year group: 11	Term: Autumn 2	Unit duration: 3 weeks	Number of lessons: 6 lessons		Unit title: Electromagnetism
Unit assessment: End of topic test				Fertile question: If we can charge a phone without wires, why can't we charge a whole house without them?	
Key skills/ concepts/ prior knowledge that students should have when starting this unit:				Start RAG	End RAG
1. Magnets have North and South poles. 2. Opposite poles attract; like poles repel. 3. A magnetic field is the area around a magnet where forces act. 4. Electric current flowing through a wire creates a magnetic field. 5. Electromagnets can be switched on and off.					
Key skills/concepts/knowledge that students should cover				Start RAG	End RAG
1. Magnetic Fields: Describe plotting field lines around a bar magnet using a compass. 2. Earth's Field: Explain that a compass needle is a small magnet pointing North. 3. Solenoids: Explain that coiling a wire increases the magnetic field strength. 4. Electromagnets: Describe how an iron core in a solenoid creates a switchable magnet. 5. The Motor Effect: Explain that a current-carrying wire in a magnetic field experiences a force. 6. Fleming's Left-Hand Rule: Use to find direction of force (Thumb), field (First Finger), and current (Second Finger). 7. Calculating Force: Use $F = B \times I \times L$ to calculate force on a conductor. 8. Electric Motors: Explain how a coil of wire rotates in a magnetic field to create motion. 9. Loudspeakers: Explain using the motor effect to convert electrical signals into sound vibrations. 10. Induced Potential (HT Only): Describe inducing a potential difference by moving a conductor in a field.					
Stretch. Key skills/concepts/knowledge that students should cover Explain how transformers step-up voltage to reduce energy loss in the National Grid.					
				Literacy. Key vocabulary/subject terminology that students should cover Solenoid, Motor Effect, Fleming's Left-Hand Rule, Magnetic Flux Density, Commutator, Induced.	
				Suggested materials teachers could/should use: AQA Combined Science textbook Oxford University Press Kerboodle	
				Key home learning tasks students should complete: Kerboodle assessment checkpoint	

