

LEARNING JOURNEY

PHYSICS

NUCLEAR PHYSICS



Atoms, Isotopes and Ions

You will learn the structure of the atom, how atoms can change and why they are radioactive

History of the Atom and Discoveries

You will look at how the model of the atom has changed over time thanks to new evidence

Decay

You will be able to describe and model alpha decay and beta decay

Nuclear physics is a very important part of modern life. It is used for energy, food preparation and medicine. But it also poses challenges, such as the cost of dealing with radioactive waste.

You will learn the basic structure of the atom and how discoveries changed our understanding of atoms.

You will study the processes behind nuclear radiation (decay) and how nuclear fission and fusion produce energy from matter.

Properties of alpha, beta and gamma

You will learn about the properties and some uses of the main types of nuclear radiation.

Half-Life

You will be able to define and model half-life and perform half-life calculations.

Irradiation and Contamination

Nuclear radiation has benefits and risks. You will learn how we can manage these

VOCABULARY

Ion, Isotope, Decay, Ionise, Irradiate, Fission, Fusion, radioactive, ionising, half-life, contamination

TUDOR HABITS AND VALUES

You will be systematic as you outline processes and perform calculations. You will be curious as you explore a fascinating topic. You will take pride in your work to use models neatly.

SEP PHYSICS ONLY

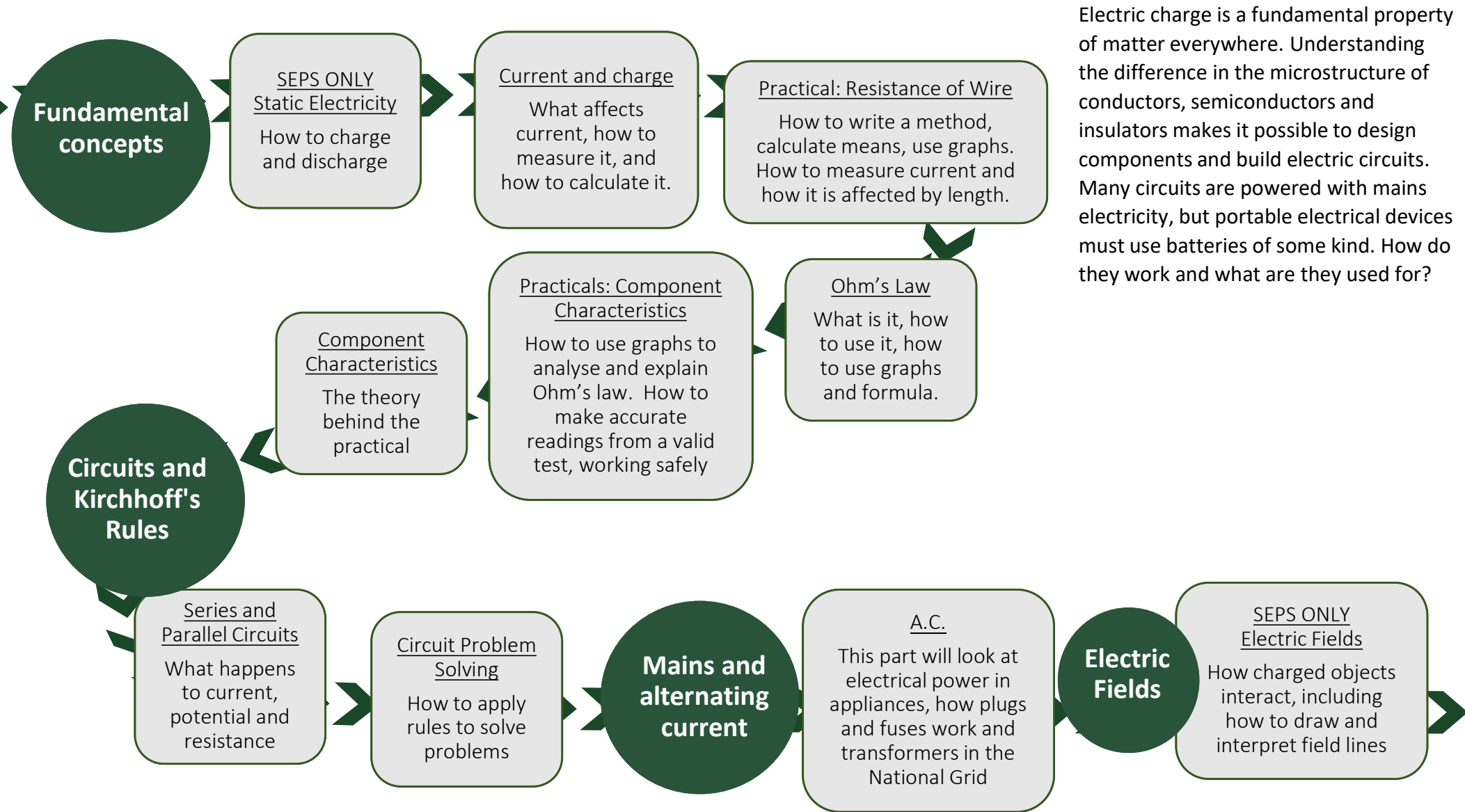
Nuclear Power; Fission and Fusion

How the processes of fission and fusion work and how we can use these for power



P2 – Electricity

Physics



Electric charge is a fundamental property of matter everywhere. Understanding the difference in the microstructure of conductors, semiconductors and insulators makes it possible to design components and build electric circuits. Many circuits are powered with mains electricity, but portable electrical devices must use batteries of some kind. How do they work and what are they used for?



VOCABULARY

charge
current
Earthed
diode

Potential
positive charge
Voltmeter
resistance

TUDOR HABITS

You will continue to work on building your toolbox of problem solving skills to support your metacognition and self-regulation



P5 Forces 2 - Motion

Motion & Forces

Vectors and Scalars

Define these terms and find the resultant of two or more vector quantities

Speed and

Distance-Time graphs

You will calculate speed and compare to displacement.

Velocity-Time graphs

You will describe a journey of an object and calculate its velocity.

VOCABULARY

Conservation
Resultant
Acceleration
Momentum
Collision

Stationary
Speed
Constant
Displacement

Acceleration:

You will apply Newton's 2nd Law of Motion to investigate the factors that affect the acceleration of a vehicle

This module continues your learning journey from previous learning from Key Stage 3 on Forces, as well as consolidating the other KS4 Forces modules.

You will develop your knowledge and apply Newton's 3 Laws of Motion to different applications.

TUDOR HABITS

You will develop the Tudor Habit of being open to failure and feedback when solving momentum calculations for colliding vehicles.