



# Science Council

## Laboratory technician

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LEARNING GUIDE

### **Optional route – Physics**

This document contains content knowledge that should be delivered as part of a high quality laboratory technician apprenticeship within physics.

This document should be used in conjunction with the core.

Topic/Subject	Links to KSB's	Overview of Coverage	Suggested learning hours
<b>Magnetism and electromagnetism</b>	K21	Magnetic poles; Electromagnets; Electromagnetic induction; Uses of electromagnetism (e.g. transformers);	20
<b>Mechanics</b>	K21	Speed, velocity, acceleration, momentum, motion under constant force, work done for constant force.  Kinetic energy, gravitational potential, conservation of energy.	20
<b>Electronics</b>	K21	Identify common electronic components; Resistive sensors; Read components values and recognise polarity (e.g. resistor colour code, capacitor values and polarity, diode markings, LEDs); Capacitors, types and use; Soldering; Use of test instruments (multimeter, oscilloscope, signal generator);	20
<b>Waves</b>	K21	Properties of waves (periodic time, wavelength, amplitude, speed, transverse, longitudinal, etc); Phase, interference, path difference, superposition; electromagnetic spectrum; emission spectra; basic optics, refraction.	20

<b>Properties of materials</b>	K21	Elasticity, stiffness, plastic deformation, malleability, strength, hardness, brittleness, ductility, density; Force extension graphs; Stress, strain; Viscosity; Thermal and electrical conductivity.	20
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