

Syllabus content for the unit: ENERGY MATTERS (EM)

In this unit, students study energy transfers in different devices. They are introduced to current, voltage, power relationships and the cost of using electrical equipment. They study energy efficiency and methods used to reduce unwanted energy losses from buildings.

Paying for Energy

- know that domestic electricity meters measure the energy supplied in kilowatt-hours.
- be able to calculate the power of a device using voltage and current measurements.
- be able to calculate the cost of operating a mains appliance of given power.
- know how radiant heaters, immersion heaters, microwave ovens and storage heaters work as common electrical heating devices.
- be able to interpret the information on domestic gas and electricity bills.

Energy Transfer

- understand that energy tends to flow from hot objects to cooler surroundings.
- know that heat energy can be transferred by conduction, convection or radiation.
- know the main ways in which energy is transferred from a house to cooler surroundings and some common methods for reducing energy transfer.
- be able to calculate rates of energy loss through materials of different U-value when given the relevant equation.

Energy Changes

- understand how solar panels can be used to provide a hot water supply for a house.
- be able to represent the useful and non-useful energy conversions in a system by energy flow arrow diagrams.
- be able to calculate the energy efficiency of a device from given data for total energy input and useful energy output.