

# Electrical Current & Fields Kit

P8-8008



## BACKGROUND:

The phenomenon of electromagnetism creates a magnetic field around a current-carrying wire. The invisible magnetic force lines created are oriented about the wire in predictable patterns, patterns which will be examined in the following exercise.

## TIME ALLOTMENT:

Suggested Time: 20 minutes – One Class Period

## ACTIVITIES:

1. Wrap the wire around the compass provided and secure it with a couple of pieces of cellophane tape.
2. Now turn the wrapped compass until the compass needle is parallel to (in line with) the wire loops.
3. Connect the Genecon to the two leads of the wrapping wire and turn the handle. Which way does the needle deflect? Does the amount of deflection depend on the rate at which you rotate the handle? Explain.
4. Repeat the above experiment exactly, but rotate the Genecon counterclockwise. What is the result?

This activity can be used to explain how permanent magnets line up with the magnetic force lines being produced by the electromagnet. It can also be used to explain how voltmeters and ammeters work.

## NOTES:

**Do not rotate the handle too fast during this experiment.** The setup is almost a completely shorted circuit and can draw enough current to overload the Genecon.

Occasionally the compass needle may “stick” in a particular direction. The culprit is residual magnetism in the needle, and can be eliminated by briefly reversing the direction of handle rotation.

