

# MAGNETIC FIELD OF THE COIL

## Laboratory Work

Once we have obtained the resistor of the coil wire and we know the available resistors, let us assemble the circuit in Figure. Clip cords are used to make connections at the terminals of one resistor of the set, which will be changed in order to take different measurements.

Let us consider that the magnetic field created by the coil will be superimposed onto the Earth's magnetic field, so, in order to know easily the contribution of each one to the resultant magnetic field, it is necessary to position the coil. Therefore, we need to find the Earth's magnetic field direction using the compass and then, we arrange the coil axis perpendicular to the field as in Figure 6.

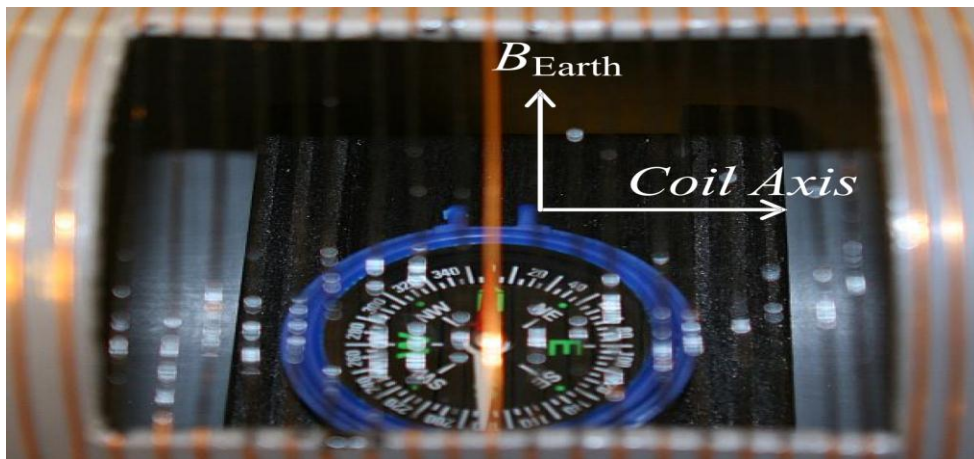


Figure. Arrangement of the coil axis with reference to Earth's magnetic field

## Coils and Magnets

Let us start using the resistor of  $22\ \Omega$ . After connecting the power supply, we close the switch (ON position). By passing the current produces a significant magnetic field inside the coil.

- Move the compass closer to one of the faces of the coil and reason from the deflection which pole type appears at that coil face. Make sure the other side acts as an opposite pole.
- Open the switch (OFF). Changes the direction of current flow by switching the connections of the feeder circuit. Close the switch and see, using the compass again, what now occurs on the faces of the coil.

Source: [http://web.ua.es/docivis/magnet/magnetic\\_field\\_of\\_the\\_coil.html](http://web.ua.es/docivis/magnet/magnetic_field_of_the_coil.html)