

# Electromagnetism

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**The branch of science dealing with the observations and laws relating electricity to magnetism.**

Electromagnetism is based upon the fundamental observations that a moving electric charge produces a magnetic field and that a charge moving in a magnetic field will experience a force.

The magnetic field produced by a current is related to the current, the shape of the conductor, and the magnetic properties of the medium around it by Ampère's law. *See also:* AMPÈRE'S LAW.

The magnetic field at any point is described in terms of the force it exerts on a moving charge at that point. The electrical and magnetic units are defined in terms of the ampere, which in turn is defined from the force of one current upon another.

The association of electricity and magnetism is also shown by electromagnetic induction, in which a changing magnetic field sets up an electric field within a conductor and causes the charges to move in the conductor. *See also:* EDDY CURRENT; ELECTRICITY; ELECTROMAGNET; ELECTROMAGNETIC INDUCTION; FARADAY'S LAW OF INDUCTION; HALL EFFECT; INDUCTANCE; LENZ'S LAW; MAGNETISM; MAXWELL'S EQUATIONS; RELUCTANCE.

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## Additional Readings

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