Glossary

AC current
current that fluctuates sinusoidally with time, expressed as $I = I_0 \sin 2\pi ft$, where I is the current at time t, I_0 is the peak current, and f is the frequency in hertz

AC voltage
voltage that fluctuates sinusoidally with time, expressed as $V = V_0 \sin 2\pi ft$, where V is the voltage at time t, V_0 is the peak voltage, and f is the frequency in hertz

alternating current
(AC) the flow of electric charge that periodically reverses direction

ampere
(amp) the SI unit for current; 1 A = 1 C/s

bioelectricity
electrical effects in and created by biological systems

direct current
(DC) the flow of electric charge in only one direction

drift velocity
the average velocity at which free charges flow in response to an electric field

electric current
the rate at which charge flows, $I = \Delta Q/\Delta t$

electric power
the rate at which electrical energy is supplied by a source or dissipated by a device; it is the product of current times voltage

electrocardiogram (ECG)
usually abbreviated ECG, a record of voltages created by depolarization and repolarization, especially in the heart

microshock sensitive
a condition in which a person's skin resistance is bypassed, possibly by a medical procedure, rendering the person vulnerable to electrical shock at currents about 1/1000 the normally required level

nerve conduction
the transport of electrical signals by nerve cells

ohm
the unit of resistance, given by 1Ω = 1 V/A

Ohm's law
an empirical relation stating that the current I is proportional to the potential difference V, $\propto V$; it is often written as $I = V/R$, where R is the resistance

ohmic
a type of a material for which Ohm's law is valid

resistance
the electric property that impedes current; for ohmic materials, it is the ratio of voltage to current, $R = V/I$

resistivity
an intrinsic property of a material, independent of its shape or size, directly proportional to the resistance, denoted by ρ

rms current
the root mean square of the current, $I_{\text{rms}} = I_0/\sqrt{2}$, where I_0 is the peak current, in an AC system

rms voltage
the root mean square of the voltage, $V_{\text{rms}} = V_0/\sqrt{2}$, where V_0 is the peak voltage, in an AC system

semipermeable
property of a membrane that allows only certain types of ions to cross it

shock hazard
when electric current passes through a person

short circuit
also known as a "short," a low-resistance path between terminals of a voltage source

simple circuit
a circuit with a single voltage source and a single resistor

temperature coefficient of resistivity
an empirical quantity, denoted by α, which describes the change in resistance or resistivity of a material with temperature

thermal hazard
a hazard in which electric current causes undesired thermal effects