

Access to Higher Education Unit

This unit forms part of an Access to HE Diploma. If delivering the graded version of this unit, please refer to the Provider Handbook for details on grading descriptors and the application of these across units within your programme.

Unit Title: Current Electricity and the Transient Response

Graded Unit Reference Number: GA33PHY06

Ungraded Unit Reference Number: UA33PHY06

Module: Physics

Level: Three (3)

Credit Value: Three (3)

Minimum Guided Learning Hours: 30

Learning Outcome (The Learner will):	Assessment Criterion (The Learner can):
1. Understand the properties of current electricity in electric circuits	1.1 Define electric current and potential difference in terms of charge
	1.2 Solve problems involving electric current, charge, potential difference and power giving answers in appropriate units
2. Understand the electrical properties of materials and the behaviour of components in electric circuits	2.1 Explain electrical conduction in metals, semiconductors and insulators, and describe applications of these properties
	2.2 Explain drift velocity and calculate its value
	2.3 Compare resistance and resistivity, conductance, and conductivity
	2.4 Solve problems involving resistance, resistivity, conductance and conductivity
3. Understand electromotive force (emf) and analyse circuits in terms of emf	3.1 Define emf and source resistance and solve simple problems involving these
	3.2 Describe the potential divider and solve problems involving potential dividers
	3.3 State Kirchhoff's laws and use them to solve problems for simple series and parallel circuits

4. Understand transient behaviour of simple L-R and C-R circuits	4.1	Define capacitance and explain the operation of a capacitor (charging and discharging)
	4.2	Define inductance and explain the operation of an inductor
	4.3	Define and calculate the time constant of a capacitor and of an inductor
	4.4	Draw circuit diagrams and explain the transient response of an R-C circuit and an L-C circuit
	4.5	Describe typical uses of R-C and L-C circuits