

# Access to H.E. National Programme Unit



Unit Title:	Current Electricity and the Transient Response		
Graded Unit Code:	GA33PHY06	Ungraded Unit Code:	UA33PHY06
Pathway(s):	Science and Engineering Construction and the Built Environment		
Module(s):	Physics		
Level:	3	Credit Value:	3
Valid from:	31 <sup>st</sup> July 2021	Valid to:	31 <sup>st</sup> July 2026

**The following QAA grade descriptors must be applied if you are delivering the graded version of this unit:**

1	Understanding of the subject
2	Application of knowledge
3	Application of skill
7	Quality

LEARNING OUTCOMES	ASSESSMENT CRITERIA
<b>The learner will:</b>	<b>The learner can:</b>
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 behavior 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

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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 behavior 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