

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: Quantum Physics

Graded Unit Reference Number: GA33PHY21

Ungraded Unit Reference Number: UA33PHY21

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 how theories of light led to a modern understanding of the photoelectric effect	1.1 Compare the wave theories of light proposed by Newton and Huygens and explain why Newton's theory was preferred
	1.2 Describe and explain the significance of Young's double slit experiments
	1.3 Explain the results of experiments to investigate photoelectric emission
	1.4 Describe Einstein's explanation of photoelectric emission
	1.5 Define work function (ϕ) and threshold frequency (f_0) and solve problems using the photoelectric equation
2. Understand electron configurations in the atom	2.1 Define the electron volt
	2.2 Explain line spectra for atomic hydrogen in terms of transition of electrons between energy levels
	2.3 Define ionization energy, excitation energy and excitation potential
	2.4 Solve simple problems involving ionization energy, excitation energy and excitation potential

3. Understand Wave-Particle Duality

3.1 Describe evidence for wave-particle duality, e.g. electron diffraction

3.2 State De Broglie's hypothesis and the equation for the De Broglie wavelength

3.3 Calculate the De Broglie wavelength for a range of particles