

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: GA33PHY23

Ungraded Unit Reference Number: UA33PHY23

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 Thomas Young's double slit experiment and explain the significance of its results.
	1.3 Explain the significance of the results of Hippolyte Fizeau and Léon Foucault's experiments on the speed of light.
	1.4 Use Einstein's ideas to explain the observations of photoelectric emission experiments, including the concepts of work function, threshold frequency and maximum kinetic energy.
	1.5 Solve problems using photoelectric equation
2. Understand electron configurations in the atom	2.1 Define the electron volt and convert energy values between electron volt and joule.
	2.2 Explain the formation of line emission spectra for atomic hydrogen in terms of transition of electrons between energy levels.

	2.3	Define ionisation energy and excitation energy.
	2.4	Solve problems involving ionisation energy and excitation energy.
3. Understand Wave-Particle Duality	3.1	Describe the evidence of wave-particle duality in light and in electrons.
	3.2	State de Broglie's hypothesis and the equation for the de Broglie wavelength.
	3.3	For a range of particle, calculate the different variables from the de Broglie wavelength equation.
	3.4	Describe the processes of transcription and translation.