

Access to H.E. National Programme Unit



Unit Title:	Nuclear Physics		
Graded Unit Code:	GA33PHY04	Ungraded Unit Code:	UA33PHY04
Pathway(s):	Science and Engineering Construction and the Built Environment		
Module(s):	Psychology		
Level:	3	Credit Value:	3
Valid from:	31 st July 2021	Valid to:	31 st 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 skills
7	Quality

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand the nuclear model of the atom	1.1 Describe Rutherford's scattering experiment and explain its significance in understanding the structure of atoms
	1.2 Explain how the results of scattering experiments can be used to an estimate of the size of the nucleus
2. Understand nuclear instability	2.1 Sketch a graph of N against Z for stable and unstable nuclei
	2.2 Use Einstein's mass energy equation to explain the binding energy of the nucleus
	2.3 Explain the decay of unstable nuclei involving γ , β^+ , β^- , nucleon emission and electron capture

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	2.4 Explain the changes in Z and A caused by different types of nuclear decay
3. Understand radioactive decay	3.1 State the exponential law of radioactive decay
	3.2 Define half-life, decay constant and activity of a radioactive material
	3.3 Solve problems involving the exponential law and radioactive decay
4. Understand nuclear fission and nuclear fusion	4.1 Sketch a graph of binding energy per nucleon against nucleon number
	4.2 Explain nuclear fission and outline common applications of nuclear fission
	4.3 Describe nuclear fusion and explain its significance
5. Understand the safe uses of radio isotopes	5.1 Explain the difference in the penetrating power of different the types of radiation resulting from radioactive decay
	5.2 Identify risks associated with radioactive sources and explain the safety precautions used to protect workers and others