# Access to H.E.
# National Programme Unit

openawards

| Unit Title: | Physical Quantities and Algebraic Methods | | |
|---|---|---|---|
| Graded Unit Code: | GA33PHY18 | Ungraded Unit Code: | UA33PHY18 |
| Pathway(s): | Science and Engineering<br>Construction and the Built Environment | | |
| Module(s): | Physics<br>Mathematics | | |
| Level: | 3 | Credit Value: | 3 |
| Valid from: | 31st July 2021 | Valid to: | 31st 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 |
|---|---|
| **The learner will:** | **The learner can:** |
| 1. Understand the SI system of units for physical quantities | 1.1 Identify the SI base units for mass, length, time, temperature, electric current, luminosity and amount of substance |
| | 1.2 Explain how the definition of some SI base units has evolved, e.g. units for mass, length and temperature |
| | 1.3 From first principles (using appropriate formulae) derive the units for velocity, acceleration, force (the newton), energy (the joule) |
| | 1.4 Represent units in standard form, e.g. $ms^{-1}$ |

| 2. | Understand how to manipulate formulae to change the subject | 2.1 | Manipulate formulae to change the subject and perform calculations, e.g. rearrange $v = u + at$ to find $a$ or $t$; rearrange $s = ut + ½ at^2$ to find $a$ or $u$ |
|---|---|---|---|
| | | 2.2 | Check the results of formula manipulation by substituting units, i.e. show that the units of the result of a rearranged formula are appropriate |
| 3. | Know how to represent and collect the terms of units algebraically | 3.1 | Perform calculations including units in standard form to derive the units of the result, e.g. where $v = u + at$, v = 2 ms$^{-1}$ + 3 ms$^{-2}$ x 2 s = 2 ms$^{-1}$ + 6 ms$^{-1}$ = 8 ms$^{-1}$ |
| | | 3.2 | Perform calculations and collect the terms of units to derive the units for solutions and check the results |
| | | 3.3 | Prove equalities by deriving units, e.g. prove the equality of potential energy and kinetic energy from their standard formulae |