

## 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:** Chemical and Acid-Base Equilibria

**Graded Unit Reference Number:** GA33CHE11

**Ungraded Unit Reference Number:** UA33CHE11

**Module:** Chemistry

**Level:** Three (3)

**Credit Value:** Three (3)

**Minimum Guided Learning Hours:** 30

Learning Outcome (The Learner will):	Assessment Criterion (The Learner can):
1. Know that many reactions are reversible and recognise that the equilibrium constant can be calculated	1.1 Use Le Chatelier's principle to predict the effects on position of equilibrium due to changes in temperature, pressure, concentration and addition of a catalyst
	1.2 Predict the effect of temperature on the position of equilibrium and explain why a compromise temperature and pressure may be used in industrial processes
	1.3 Construct an expression for $K_c$ and perform calculations for a homogeneous system at constant temperature
	1.4 Predict and explain the effects of changes in temperature, concentration or the addition of a catalyst on the value of the $K_c$ of a range of given reactions
2. Know that acids and bases react in different ways	2.1 Define acids and base in terms of proton transfer
	2.2 Define pH and calculate the pH of strong acids from its concentration or vice versa
	2.3 Describe the dissociation of weak acids and bases in aqueous solution
	2.4 Define $K_a$ and $pK_a$

	2.5 Calculate the pH of weak acids, and explain the assumptions made in such calculations
3. Recognise that the dissociation of water is an example of homogeneous equilibrium	3.1 Define $K_w$ and calculate the pH of a strong base
	3.2 Explain the variation of $K_w$ with temperature
4. Understand the nature and action of buffer solutions	4.1 Describe the components of an acidic buffer and of a basic buffer
	4.2 Qualitatively explain the action of acidic and basic buffers using specific examples from living or non-living systems