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: Characteristics of the Periodic Table

Graded Unit Reference Number: GA36CHE18

Ungraded Unit Reference Number: UA36CHE18

Module: Chemistry

Level: Three [3]

Credit Value: Six [6]

Minimum Guided Learning Hours: 60

Units barred for selection against this unit:

- **Periodicity (GA33CHE14 / UA33CHE14)**
- **The Transition Elements (GA33CHE15 / UA33CHE15)**

Learning Outcome (The Learner will):	Assessment Criterion (The Learner can):
1. Understand the arrangement of elements in the periodic table	1.1 Describe how elements are arranged within the periodic table
	1.2 Explain the electron configuration of elements in relation to their position in the periodic table
2. Know the trends in physical and chemical properties of elements in period 3 of the periodic table	2.1 Describe the trends in atomic radius, first ionisation energy and melting points of the period 3 elements
	2.2 Explain the trends in atomic radius and first ionisation energy of the period 3 elements
	2.3 Explain the trend in melting point of the period 3 elements
	2.4 Write equations for the reactions of the oxides of period 3 elements with water, a strong acid and/or a strong base, where appropriate

Learning Outcome (The Learner will):	Assessment Criterion (The Learner can):
	2.5 Describe the trend in acid-base behaviour of the period 3 oxides
3. Know the trends and patterns of the elements in group 1 and group 7 (17) of the periodic table	3.1 Describe and explain the variation of atomic radius, first ionisation energy and electronegativity of group 1 elements
	3.2 Describe the reactions of group 1 elements with water and use these reactions to explain the trend in reactivity of group 1 elements
	3.3 Describe and explain the variation of atomic radius, first ionisation energy, electronegativity and melting point of group 7 (17) elements
	3.4 Perform displacement experiments between group 7 (17) elements with halide salt solutions
	3.5 Describe and explain the variation in oxidising powers of group 7 (17) elements
4. Recognise the properties and trends in transition elements	4.1 Write the configuration of a transition element and its ion limited to the series scandium to zinc
	4.2 Describe the physical and chemical properties: variable oxidation state, catalytic activity, coloured ions and complex formation
	4.3 Using specific examples, explain how transition metals or their complexes are able to act as homogeneous and heterogeneous catalysts
	4.4 Explain why transition metal complexes are coloured
5. Understand the common reactions of the ions; Cu^{2+}, Co^{2+}, Cr^{3+} and Fe^{3+}	5.1 Investigate how each ion (Cu^{2+}, Co^{2+}, Cr^{3+} and Fe^{3+}) reacts with aqueous ammonia, include any observations and the relevant equations
	5.2 Investigate how each ion (Cu^{2+}, Co^{2+}, Cr^{3+} and Fe^{3+}) reacts with aqueous sodium hydroxide, include any observations and the relevant equations
6. Know the concept of oxidation and reduction in terms of electron transfer	6.1 Define oxidation and reduction in terms of electron transfer

Learning Outcome (The Learner will):	Assessment Criterion (The Learner can):
	6.2 Construct redox half-equations for a variety of species, including oxygen containing species which involve acidification
	6.3 Apply half-equations to balance equations of redox reactions, including oxygen containing species which involve acidification