Changing lives through learning

Qualification Unit

This unit forms part of a regulated qualification.

Unit Title: Chemical Principles for Pharmacy Technicians

Unit Reference Number: H/617/8903

Level: Three (3)

Credit Value: Three (3)

Minimum Guided Learning Hours: 20

Learning Outcome (The Learner will):	Assessment Criterion (The Learner can):
1. Understand the principles behind the periodic table and bonding	1.1 Explain the **atomic structure** of **elements** in the periodic table
	1.2 Describe **inter** and **intra** molecular forces of attraction
	1.3 Describe chemical bonding between atoms
	1.4 Describe chemical bonding between molecules
2. Understand the principles behind chemical reactions in pharmaceutics	2.1 Describe how **chemical and physical factors** affect the rates of reactions
	2.2 Explain how the principles of **pH** are applied to pharmaceuticals
	2.3 Explain the concept of **chemical formulae**
	2.4 Explain how the **chemical and physical properties** of different forms of pharmaceutical products affect formulation
3. Understand the structure and function of enzymes	3.1 Explain the molecular structure of **water**
	3.2 Describe the **special characteristics** of water resulting from hydrogen bonding
	3.3 Explain the biological **importance** of water
	3.4 Explain why pharmaceutical products require different **types of water** in their manufacture

Indicative Content	
LO1	**Atomic structure**: Protons, neutrons, electrons, basic arrangement of electrons around the nucleus, atomic number, mass number, isotopes. **Elements:** The first 20, position in the periodic table, grouping, reaction trends. **Inter:** Van der Waals forces, dipole-dipole forces, hydrogen bonding. **Intra:** Covalent, Ionic.
LO2	**Chemical and physical factors**: Changes in concentration, temperature, pressure, surface area, catalysts. **pH**: pH scale, pharmaceutical examples of acids and bases, pH buffer. **Chemical formulae:** Structural formulae, displayed formulae, isomers, pharmaceutical formulae. **Chemical and physical properties**: solubility; solute; solvent; saturated; super saturated; isotonicity; factors affecting rate of solution; characteristics of emulsions, characteristics of suspensions; solid dose forms; chemical and physical purity of raw materials; quality standards applied to materials; contamination of raw materials.
LO3	**Water:** Molecular structure, interactions between molecules. **Special characteristics:** High melting point, boiling point, density of ice compared to water. **Importance:** Biological solvent, transport medium, lubricant, moderation of temperature, metabolite. **Types of water:** Potable, distilled, de-ionised, purified, water for preparations, water for injections, sterile water, pyrogen free.