VCC-205 General Biochemistry

Objective - Its aim is to understand the fundamental chemical principles that govern complex biological systems. The program is an interdepartmental major between biology and chemistry that emphasizes the importance of a solid foundation in the natural sciences.

UNIT – 1 **Carbohydrates-** General introduction, classification of carbohydrates, Glucose; fructose; galactose; lactose; sucrose; starch and glycogen (properties and tests, Structure and function), Metabolism of carbohydrate, glucose metabolism, ; glycolysis, gluconeogenesis, TCA cycle.

Proteins -Introduction, Amino acids, classification, peptides, and proteins (general properties & tests with a few examples like glycine, tryptophan, glutathione, albumin, hemoglobin, collagen)

UNIT – 2 **Lipids-** Fatty acids, saturated and unsaturated, cholesterol and triacylglycerol, phospholipids and plasma membrane.

Vitamins -General introduction, classification and emphasis on Vitamin A, B2, C, E and inositol (requirements, assimilation and properties).

Minerals--Na, K, Ca, P, Fe, Cu and Se (requirements, availability and properties),

Enzymes -- Definition, Cofactor (Coenzyme, Activator), Proenzyme. Classification with examples, Factors effecting enzyme activity, Enzyme inhibition and significance, Iso enzymes, Diagnostic enzymology (clinical significance of enzymes)

UNIT – 3 **Acid-Base balance**- Acids, bases and buffers, ph. Buffer systems of the body, bicarbonate buffer system Role of lungs and kidneys in acid base balance, Acid base imbalance,

Water balance- Water distribution in the body, Body water, water turn over, Regulation of water balance: role of ADH and thirst center., Electrolyte balance-Osmolarity (Distribution of electrolytes). Role of aldosterone, rennin angiotensin system and ANF.

UNIT – 4 **Clinical Biochemistry**- Normal levels of blood and urine constituents, Relevance of blood and urine levels of Glucose, Urea, Uric acid, Creatinine, Calcium, Phosphates, pH and Bicarbonate.

Recommended Books:

- Biochemistry by U.Satyanaranya,
- Biochemistry for medical by DM Vasudevan.