

Programme	BS Botany	Course Code	BOT-211	Credit Hours	2
Course Title	Principles of Plant Biochemistry (Theory)				
Introduction					
<p>The course is organized to provide an adequate knowledge of the key principles of Biochemistry using selected cellular macromolecules and the underlying concepts in catalysis. It focuses not only on the individual molecules that form the backbone of these diverse molecules but also the structural role they play with particular reference to higher plants. In addition, the biological role of these macromolecules is also the focus of this course. Hierarchical levels of organization of certain complex macromolecules such as proteins and their myriad roles in structure and function of plant cells are discussed. Key concepts and the underlying principles are included to understand the basis of catalysis.</p>					
Learning Outcomes					
<p>Students are expected to get themselves familiarized with:</p> <ul style="list-style-type: none"> • the principles governing molecular/macromolecular organization of plant cells in general. • infinite possibilities of structural organization, molecular backbones and the myriad roles or functions they can take or perform. • How catalysis takes place? • the basic concepts and guiding principles with regard to configurational as well as conformational changes in enzyme catalysis. 					
Course Contents					
<ul style="list-style-type: none"> • Introduction to Biochemistry, Underlying principles, Structure and Catalysis. • Carbohydrates: Occurrence, Classification, Structure and Chemical properties, Mono, Di, Oligo and Polysaccharides, Glycoconjugates. • Lipids: Occurrence, Classification. Structure and chemical properties of Fatty acids, Triglycerides, Phospholipids, Glycolipids, Sulpholipids, Waxes, Carotenoids and Sterols. • Proteins: Amino acids, structure and classification. Diversity of structure and function. Primary, Secondary, Tertiary and Quaternary structure of proteins. Protein targeting, folding and unfolding. Principles of protein purification. • Nucleic Acids: Introduction. Purine and Pyrimidine bases, Nucleosides, Nucleotides. Underlying principles governing structure and role of DNA and RNA. DNA sequencing. • Enzymes: Nature and functions, Classification. Principles of enzyme action. Enzyme specificity. Transition state. Binding energy. Isozymes, Ribozymes. Enzyme kinetics. Allosteric modulation. 					