**Title: Nucleic Acids: 1-DNA**

**Course Objectives**

* Understand the structure and function of DNA.
* Explore the significance of DNA in genetics and biology.

**Course Outline**

**I. Introduction to Nucleic Acids**

* A. Definition of nucleic acids
* B. Importance in biological systems

**II. Structure of DNA**

* A. Discovery of DNA (Watson and Crick model)
* B. Components of DNA
  1. Nucleotides (sugar, phosphate, nitrogenous bases)
  2. Base pairing (A-T, C-G)
* C. DNA double helix structure
* D. Major and minor grooves

**III. Types of DNA**

* A. Genomic DNA
* B. Mitochondrial DNA
* C. Plasmid DNA (in prokaryotes)

**IV. Functions of DNA**

* A. Genetic information storage
* B. Role in heredity
* C. Gene expression and regulation
* D. Overview of the central dogma (DNA → RNA → Protein)

**VI. Techniques for Studying DNA**

* A. DNA extraction methods
* B. Gel electrophoresis
* C. PCR (Polymerase Chain Reaction)
* D. DNA sequencing techniques

**VII. Applications of DNA Knowledge**

* A. Genetic engineering
* B. Biotechnology and medicine
* C. Forensic science
* D. Evolutionary biology

**Conclusion**

* Summary of key points
* Importance of understanding DNA in various fields