**Biology**

**DSE Paper I**

**Course Objective:** This course will introduce students to about the basic structure of life and its importance. The students would be appraised about the differences between Prokaryotic and Eukaryotic cell, Plant and Animal Cell. They would also come to know about different botanical evidences and their significance in Forensic Science.

**Course Outcomes**

**CO 1:** To know the fundamentals of life forms in existence.

**CO 2:**To identify the basic differences among different types of cells

**CO3:**To understand different types of botanical evidences and their role in criminal investigation.

**Unit 1:** Introduction of Cell, Cell Theory and Structure. Functions of Cells. Difference between Euakaryotic and Prokaryotic Cell. Difference between Plant and Animal Cell. Cell Division: Definition, Types, Difference Somatic and Germinal Cells.

**Unit 2:**General Characteristics, Classification and Economic importance of Algae, Fungi, Lichens, Bryophytes, Pteridophytes & Gymnosperms. Principle of Classification and Nomenclature of Angiosperms, Anatomy of Angiosperms, Structure and Development of Anthers and Ovules, Fertilization, Seed Development, Dormancy and Germination.

**Unit 3:** Morphology of root, leaf, stem, flowers and their modifications. Anatomy of mono and dicot roots, leaves and stems- Secondary Growth, Growth Rings, Calculation of Life of Wood.

**Unit 4:** Identification of Plant Specimens; Techniques for Dating Specimens Using Plant Materials. Algal Colonization, Application of Plant Ecology; Different Botanical Evidences of Forensic Significance. Diatoms: Classification, Basic Structure and Morphology, Isolation of Diatoms from Various Samples and Its Forensic Significance. Introduction to Spores and Pollen Grains, and their Forensic Importance.

**Suggested Readings:**

1. Mawaniki, J.M. and Geofrey, G.G. Fundamentals of Biology. Longhorn Publication; 2020.
2. Pollard, T.D., Warnshaw, W.C., Schwartz, J.L. and Jhonson, G.T. (Eds.) Cell Biology, 3rd Ed.; 2017.
3. James, S.H. and Nordby, J.J. Forensic Science: An Introduction to Scientific and Investigative Techniques, CRC press, USA; 2003.
4. Saferstein, R. Science Handbook, vol. I, II and III. Prentice Hall, New Jersey; 1982.
5. Wilson, J. and Hunt, T. Molecular Biology of the Cell- The Problems Book, WW Norton Company; 2014.
6. Lundquist, F. and Curry, A. S. (1965) Methods of Forensic Science.Interscience Publisher, New York; 1962.