

**AGRI 313**<sub>(ELECTIVE-II)</sub>

**Fundamentals of Genetics**

**Credit hours (2+1=3)**

**Theory**

Introduction to genetics; Cell division: mitosis and meiosis; Mendelian principles of heredity; Study of chromosome structure; Multiple alleles, pleiotropism and pseudoalleles and blood group genetics; Linkage and its estimation, crossing over mechanisms, chromosome mapping; Sex determination and sex linkage, sex limited and sex influenced traits; Qualitative and quantitative traits, polygenes and continuous variations, multiple factor hypothesis; Cytoplasmic inheritance; Mutation- classification, Methods of inducing mutation and CIB technique, mutagenic agents and induction of mutation; Structural and numerical changes in chromosome; Nature, structure and replication of genetic material; Protein synthesis-transcription and translational mechanism of genetic material; Gene concept- gene structure and functions; Gene regulation- Lac and Trp operons.

**Practical**

Study of Microscope; Study of cell structure and functions; Practice on mitotic and meiotic cell division; Experiments on monohybrid, dihybrid, trihybrid, back cross and test cross; Chi-square test; Epistatic interactions; Determination of linkage and cross over analysis (through two point test cross and three point test cross data)