

## **PSG1C01 HUMAN PHYSIOLOGY (Complementary)**

### **Module 1 Cellular organization**

- 1.1 Cell structure, plasma membrane (fluid mosaic model), and cell organelles.
- 1.2 Cell inclusions-brief description on the structure of carbohydrates, lipids and proteins.
- 1.3 Cell theory, cell principle.
- 1.4 Unicellularity to multicellularity, differentiation. Brief mention of spatial and temporal control of gene activity.
- 1.5 Tissues- brief description of major types.

**(Hours - 20)**

### **Module 2 Genes and chromosomes**

- 2.1 Structure of D.N.A, D.N.A replication.
- 2.2 Concept of a gene - genetic code, introns, exons.
- 2.3 Morphology of chromosomes-size, shape, karyotype, idiogram, kinds of chromosomes.
- 2.4 Linkage and crossing over, sex linked chromosomes.

**(Hours - 14)**

### **Module 3 Cell division**

- 3.1 Cell cycle.
- 3.2 Mitosis.
- 3.3 Meiosis.

**(Hours - 12)**

### **Module 4 Elements of heredity and variation**

- 4.1 Mendel's work and laws of inheritance (monohybrid cross, dihybrid cross, test cross).
- 4.2 Brief explanation of terms-alleles, homozygosity, heterozygosity, genotype, phenotype.
- 4.3 Brief description of other patterns of inheritance and genotype expression incomplete dominance, co-dominance, multiple alleles, epistasis, pleiotropy.

**(Hours 12)**

### **Module 5 Mutations and Genetic disorders**

- 5.1 Gene mutation-Kinds of mutation, classification (Somatic, gametic, point, spontaneous, induced, dominant, recessive and silent mutations).
- 5.2 Gene mutation disorders - albinism, phenylketonuria, alkaptonuria, galactosemia, brachydactyly.
- 5.3 Autosomal anomalies - Down's syndrome, Edward's syndrome, Cri du chat syndrome.
- 5.4 Sex chromosomal anomalies - Klinefelter's syndrome and Turner's syndrome.

**(Hours – 14)**