

SARDAR PATEL UNIVERSITY
Programme: BSC (GENETICS)
Semester: V
Syllabus with effect from: June 2013

Paper Code: US05CGEN06	Total Credit: 3
Title Of Paper: Human Genetics	

Unit	Description in detail	Weighting (%)
1	GENOME ORGANIZATION History and Scope of Human Genetics, Nuclear genome: General feature of human genome, unique sequences and hypervariable region, coding and non-coding sequences, Genes (polypeptide encoding and RNA) and gene families. Human genome project: overview and significance.	
2	MAPPING METHODS Mapping methods for Human genome, Physical maps–cytogenetic map, contig map, restriction map, landmarks on chromosomes generated by various mapping methods, BAC libraries and shotgun libraries preparation, Chromosomal location of genes-chromosome walking and chromosome jumping	
3	GENETICS DISORDERS List of Syndromes and disorders due to genetic defects, Definition and the genetic basis of monogenic diseases: Tay Sach’s Syndrome, Marfan Syndrome, Sickle cell anemia, Haemophilia Inborn errors of metabolism: Phenylketonuria & Galactosemia, Neurogenetic disorders: Alzheimer’s disease, Parkinson’s. Multifactorial disorders: Diabetes mellitus, Obesity	
4	GENETIC TESTING Definition, Types [diagnostic and predictive], Importance, Contexts in which diagnosis is done: prenatal screening, neonatal screening & others. Commonly used tests for screening of genetic disorders based on urine and blood analysis [Ferric chloride test, Guthrie bacterial inhibition assay],[maternal serum alpha fetoprotein (MSAFP)-Quad test], Fetal chromosome (karyotype) testing, SAGE [serial analysis of gene expression].	

Basic Text & Reference Books:

- Genomes3 - T.A. Brown, Garland Science Publishing
- Biotechnology - John E. Smith, Cambridge University Press
- Molecular cloning: A Laboratory Manual - Sambrook, Fritsch & Maniatis, Cold Spring Harbor Lab
- Human molecular genetics - Tom Strachan & Andrew P. Read.3rd Ed, Garland Science Publishing
- Human molecular genetics. - Peter Sudbury, Pearson Publications
- Thompson & Thompson Genetics in Medicine - Robert L. Nussbaum, Roderick R. McInnes Huntington F. Willard.6th Ed, Saunders publication
- Genetics: A conceptual approach - Benjamin A. Pierce. 3rd Ed, W.H. Freeman & Company .

