

**IV Sem. Soft Core Paper -2: MEDICAL & ENVIRONMENTAL IMPLICATIONS OF  
DEVELOPMENTAL GENETICS**

**THEORY**

**48 Hrs.**

**UNIT I**

**16 Hrs.**

**Development and Environment:**

a) Developmental symbiosis, b) Embryonic diapause. c) Phenotypic plasticity: Polyphenism – nutritional, seasonal, Diet and DNA methylation, predator induced polyphenism, Environment dependent sexual phenotype, learning - Adaptive nervous system. d) Stress induced gene expression.

**UNIT II**

**16 Hrs.**

**A) Teratogenesis:** Teratogenic agents and their assault on human development- Alcohol, Retinoic acid, thalidomide, endocrine disruptors - DES, Nonylphenol, BPA, DDT, Heavy metals, pathogens etc.

**B) Neoplasia** as a disease of altered development, Differentiation therapy.

**UNIT III**

**16 Hrs.**

**A) Stem cells:** Embryonic stem cells – therapeutic cloning, Multipotent adult stem cells, transgenic stem cells. Regeneration Therapy

**B) Aging:** a) Concept of aging - organismal b) cellular changes during aging (DNA damages, shortened telomere, mitochondrial mutations, oxidative stress) c) Theories of aging.