

PAPER III

COURSE: Integrated Ph.D Programme in BIOTECHNOLOGY
SESSION:2020

SYLLABUS PAPER 3rd : Specialised paper

UNIT 1: Cancer

Introduction. Types. Cancer Grades/Stages. Hallmarks Of cancer. Cell cycle check points and cancer, oncogenes, tumor suppressor genes, apoptosis, Tumour progression: angiogenesis and metastasis therapeutic interventions of uncontrolled cell growth.

UNIT 2: Tumor microenvironment

Immune cells in the tumor microenvironment, healthy cell secretome and tumor cell secretome, tumor associated immune cells, Interaction of immune cells and cancer cells,

UNIT 3: Drug resistance in cancer

Current Chemotherapy regimens, drug resistance in cancers: mechanisms of drug resistance, Biological determinants of drug resistance, Overcoming drug resistance in cancers.

UNIT 4: Techniques in cancer biology and immunology

Electrophoresis: agarose gel, SDS-PAGE and isoelectric focusing. Southern, Northern, Western blotting. Methods for analysis of gene expression at RNA and protein level. Detection of various molecules using Immunoprecipitation, ELISA, Western Blot, flow cytometry and immunofluorescence microscopy.

