AMITY UNIVERSITY
UTTAR PRADESH

Course Title: Cancer Biology

L	T	P/S	Lab	TOTAL CREDIT UNITS
3	-	-	-	03

Course Code: BIOT401
Credit Units: 03

Course Objectives: The Course aim to provide theoretical and analytical skills used in cancer research and familiarize the students with cell and molecular biology of cancer cells

Pre-requisites: Genetics, Cell Biology, Biochemistry and Molecular Biology.

Student Learning Outcomes: By the end of the course, students would be able to comprehend:

- Histological and pathological features of Benign and malignant cancers
- Cellular and molecular aspects of cancer
- Introduction to general aspects of therapies of cancer
- Diagnostic and preventive approaches of cancer

Course Contents

Theory:

	Weightage (%)
Module I: Characteristics of Human Cancer	**15**
Definition of cancer, classification of human cancers, macroscopic and microscopic features of neoplasm, histologic grades of malignancy, tumor staging. Growth characteristics of malignant cells: Immortalization and transformation, solid tissue cancers, blood cancers	
Module II: Causes of Cancer	**15**

Role of chemical carcinogens, radiations and genetic predispositions, other environmental carcinogens, stress related factors, viral and other microbial factors in carcinogenesis.	
Module III: Molecular Genetics of Cancer	**25**
Proto-oncogenes, role of oncogenes and tumor suppressor genes in carcinogenesis. Role of apoptosis, telomerase, angiogenesis, and invasion and metastasis in cancer development	
Module IV: Cancer Epigenetics	
Overview on role of DNA methylation, histone modifications, and microRNA in cancer development.	**15**
Module V: Cancer Diagnosis	
Conventional methods of cancer diagnosis, Cancer biomarkers-definition and classification, Genomics and proteomics tool for the discovery and identification of cancer biomarkers.	**15**
Module VI: Cancer Prevention and Therapeutics	
General Principles of Conventional cancer treatment-Radiotherapy, surgical and chemotherapy. Cancer chemoprevention, Molecular targeting and drug delivery systems for cancer.	**15**

Pedagogy for Course Delivery:

Lectures: 39
Class Test: 2
Seminars and Presentations: 4
Total: 45

Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)	End Term Examination
100	**Nil**	**100**

Theory Assessment (L&T):

Components	Class Test 1	Class Test 2	Assignment/ Seminar	Attendance	End Term Examination
Weightage (%)	**10**	**10**	**5**	**5**	**70**

Text Books and References:

- Cancer Biology by Raymond W. Ruddon (4th Edition). Oxford University Press, 2007. ISBN: 978-0195175448.
- The Biology of Cancer by Robert A. Weinberg (2nd Edition). Garland Science 2013. ISBN: 978-0815342205.