

**SRM UNIVERSITY**  
**FACULTY OF ENGINEERING & TECHNOLOGY**  
**DEPARTMENT OF BIOINFORMATICS**

**BI0358- CANCER BIOLOGY**

**LESSON PLAN**

**Semester: VI**  
**Sub Code: BI0358**

**Course: Cancer Biology**  
**Staff Handling: Dr.S. ThyagaRajan, BVSc, PhD.**

	<b>Lecture Topics</b>	<b>Learning Outcomes</b>	
1 -3	Basic concepts of cancer: Risk factors, Pathogenesis, .Treatment, and future prospects	After understanding the basics of cancer, the cellular events that lead to cancer will be described. The factors that are involved in cell cycle regulation will be known.	
4-5	The cell cycle: cyclin and cyclin dependent kinases, mechanisms of CdK regulation		
6	pRb and control of cell cycle		
7	Role of myc oncoprotein in regulating pRb		
8	TGF and pRb; pRb's role in cancer		
9	Tumor suppressor genes		
10	Cell cycle and cancer		
11	Different forms of cancer		
12	Diet and cancer		
13	DNA structure and stability-Mutations versus Repair Cancer and Environment		Knowledge about the role of carcinogens, mechanisms of carcinogenesis and their effects on DNA will be provided
14	Causes of cancer and risk factors		
15	Classes and types of carcinogens		
16	Mechanisms of Chemical carinogenesis		
17-18	Ecogenetics and cancer risk; Cancer Prevention		
19	Oncogenes, Growth factors, and growth factor receptors	An understanding about the role of oncogenes, growth factors and their interactions resulting in cancer development will be achieved.	
20-23	Signal transduction through Protein Tyrosine Kinase receptors, Oncogenes and survival signaling, Cytokine receptor signaling, Neurotransmitters, Wnt signaling, Hedgehog/Patch signaling; Implications in cancer therapy		
24-30	Growth factors, receptors and Cancer Src protein, EGF receptor, Integrin receptors, Ras protein, Intracellular signaling pathways		
31-39	Invasion and Metastasis Travel of cancer cells, Colonization, Epithelial-mesenchymal transition; TGF, macrophages, and extracellular proteases in metastasis; Lymphatic vessels for dispersion; Migration to bone	The process of metastasis both at the organ, cellular, and molecular level will be provided.	
40	Tumor Angiogenesis		
41	Therapeutic strategies in Cancer	Current treatment strategies and the possibilities of future therapy options will be explained	
42-44	Molecular basis of cancer therapy		
45	Cancer in the future: focus on diagnostics and immunotherapy		