Optional Course

LS 564— MOLECULAR CANCER BIOLOGY [2 credits]

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S No	Topic	Contact Hours
1.	Cancer incidence and mortality; origin of neoplastic cells; cancer as cellular disease; tumor cell growth kinetics	
2.	Oncogenes and tumor suppressor genes	
3.	Environmental carcinogens; carcinogen metabolism	
4.	Chemical carcinogenesis; initiation, promotion and progression	
5.	Mechanism of ultraviolet radiation carcinogenesis (melanoma and non melanoma skin cancer)	
6.	Animal models of cancer research; athymic nude mice model; syngeneic mouse model, transgenic mouse model etc.	
7.	Heredity and cancer; genetic basis of carcinogenesis (e.g. APC mutation and colon cancer)	
8.	Viral carcinogenesis mechanism	
9.	Immunological aspects of cancer; leukemia	
10.	Deregulated cell cycle progression in cancer	
11.	Aberrant cell signaling in cancer	
12.	Antiapoptotic mechanisms for the survival of cancer cells	
13.	Tumor angiogenesis and its molecular mechanisms	
14.	Mechanisms of cancer invasion and metastasis	
15.	Cancer therapeutics: surgery, radiation and chemotherapy	
16.	Chemoprevention of cancer	

Suggested reading:

1. Molecular Biology of Cancer by F. Macdonald, C.H.J. Ford, and A.G. Casson; Garland Science / Bios Scientific Publishers
2. Molecular Biology of Human Cancers by Wolfgang Arthur Schulz Springer