**CANCER BIOLOGY CREDIT HOURS 2+1**

**LEARNING OUTCOMES:**

**The students will able to clearly demonstrate:**

1. The types of cancers and cell cycle.
2. The role of nutrients, hormones and gene Interaction in carcinogenesis

**COURSE CONTENTS:**

Cell cycle, Check Points, Regulatory activities in S and M Phase (Heterokaryon experiments), Oncogenes: Growth factors, Receptors, Signal Transducer, Transcriptional Factors and Cell Cycle Genes. Tumor Supressors: (Rb and P53 etc.), metastasis suppressor gene, oncoviruses, Different types of cancers, Tumor progression, Invasion and Metastasis, Cancer Epidemiology and Prevention, Risk factors and Carcinogenic agent: Chemicals and Radiations, Role of Nutrients, Hormones and Gene Interaction in Carcinogenesis, cancer diagnostics and biomarkers, Cancer Therapies.

**PRACTICALS:**

1. Study of prepared specimens and slides of different tumors
2. Heterokaryon experiments
3. Study of DNA damage by physical and chemical methods
4. Ames test for identification of mutagenic agent
5. Case study of chromosomal abnormalities in human

**RECOMMENDED BOOKS:**

1. Joyce, S., 2015. Cancer Biology. Kendall Hunt Pub Co.
2. Mendelsohn, J., Gray, J. W., Howley, P. M., Israel, M. A., & Thompson, C. 2015. The molecular basis of cancer. Philadelphia, PA: Saunders/Elsevier.
3. Mitchell, M. G. 2016. Cell biology: Translational impact in cancer biology and bioinformatics. London: Elsevier Science.
4. Strano, S. 2016. Cancer chemoprevention: Methods and protocols. New York: Humana Press.
5. Thiagalingam, S. 2015. Systems biology of cancer.Cambridge Press.

Vogelstein, B. and Kinzler, K. W. 2002. [The Genetic Basis of Human Cancer](http://shop.barnesandnoble.com/booksearch/isbnInquiry.asp?userid=17QS6S9AX4&mscssid=W1R8GNP52G0X8K4E9BV1JK11U9U10602&sourceid=00112249383959920691&bfdate=01%2D18%2D2002+04%3A24%3A38&isbn=0071370501), McGraw-Hill Companies, N.Y.