

### Course contents for Tumor Cell Signaling and Therapeutics

1. **Faculty:** FLSB
2. **Course Code:**
3. **Course Title:** Tumor Cell Signaling and Therapeutics
4. **Number of Credits:** Two
5. **Course objectives:**

The goal of this course is to understand basic cellular and molecular mechanisms of cell growth, function and division. The basic concept and the signaling mechanisms of normal cell functions and their transformation into cancer cells will be focused. This course also will focus on hands-on experience in handling cells and transfection techniques. The course includes group discussions, journal article presentation and discussion by the students.

6. **Minimum prerequisites for taking this course, if any:** Master level of Molecular Biology, Cell Biology, Genetics, Biochemistry and Molecular Biology.
7. **Course structure with units, if applicable:** The following topics will be covered as part of the course:
  - a. **Hallmarks of Cancer**
  - b. **Cancer cell signaling:** Major signal transduction pathway involved in cancer pathogenesis and its implication to understand cancer therapy
  - c. **Deregulation of p-RB and cell cycle-** Role of pRb in cell cycle regulation, role of cyclin dependent kinases and their inhibitor in cell cycle clock, role of transcription factor E2F in cell cycle, role of myc and TGF beta in cell cycle regulation basically focused in deregulation of cell cycle in cancer by above mentioned factors.
  - d. **P53 and apoptosis-** The guardian angel- Basic concept of P53, role of P53 in tumor progression, different pathways involved in apoptosis.
  - e. **Cancer Treatment:** Recent advances in treatment of cancer, clinical trials and chemotherapeutic trends

#### 8. Reading suggestions:

- a. **The Biology of Cancer** by Robert A. Weinberg
- b. **Introduction to Cancer Biology** by Robin Hesketh
- c. **Cancer Biology-** Ramond Ruddon
- d. **Journal of Cancer Research**
- e. **Journal of Oncogene**
- f. **Journal of Carcinogenesis Cell**

#### 9. Evaluation:

Paper Presentations/Discussion/Quiz/Assignment	: 30% Marks
Practical and Assessment	: 30% Marks
Written Examination	: 40% Marks