**Meeting Time and Place:** Mondays and Wednesdays, 2:00 to 3:30 PM, First Meeting: January 18, 2012 in the Massry Auditorium, East Campus, Cancer Research Center.

**Short Description:** This course will present an overview of the cancer development process at the cellular and molecular level, including regulatory networks involved in growth control and tissue organization and an introduction to animal, cell and molecular techniques for studying progression, treatment and prevention of cancer.

**Specific Course Objectives:**

- To gain an appreciation of the complexity of the cancer development process at the cellular and molecular level.
- To provide students with an understanding of regulatory networks involved in growth control and tissue organization. This will primarily be achieved through the study of changes observed when these networks are disturbed in cancer cells.
- To gain exposure to whole animal, cell culture and molecular techniques for studying progression, treatment and prevention of cancer.
- To develop fundamental concepts of cancer identification, etiology and epidemiology.
- To understand the cellular and molecular basis of current strategies for cancer prevention and treatment.

**Course Format and Grading:**

- The course format will include lectures, discussions and activities (readings, web site work, case studies, presentations).
- Three exams will be required, each worth 25% of the final course mark. Participation, written assignments and/or presentations throughout the semester will count for 25% of the mark. Details on exams will be provided in class.

**Course Materials:**

**Textbooks and Readings:** In this course, we will predominantly utilize review articles and research papers. We will also rely on various web sites for activities and information. If you don't have a cancer biology textbook, *The Biology of Cancer* by Robert Weinberg (2006) is recommended and can be obtained in paperback online (Amazon and others) for about $85. Also I have two copies that I am happy to lend out.

**WebFile:** Powerpoints, lecture notes, and supplemental information or readings will be available for each lecture through the UA course reserve system. The formats will be Powerpoint, Word or PDF. Please let me know if you have trouble accessing these files at any time.

**Course Director:** Dr. JoEllen Welsh, Professor, Departments of Environmental Health Sciences & Biomedical Sciences, Room 304D CRC, East Campus. 591-7232 or jwelsh@albany.edu

**Participants**
Dr. Doug Conklin – Associate Professor, BMS  
Dr. Stewart Sell – Professor, BMS  
Dr. Martin Tenniswood – Professor, BMS  
Dr. James Figge – Adjunct Professor, BMS
Jan 23-25: Introduction to Cancer Biology
- Jan 18  Course overview (Welsh)
- Jan 23  Definitions & Pathology (Sell)
- Jan 25  Modeling cancer in vitro and in vivo (Welsh)

Jan 30 – Feb 8: Molecular Basis of Cancer I: DNA Damage and Repair
- Jan 30 - Feb 1  Mechanisms of Radiation and Chemical Carcinogenesis (Welsh)
- Feb 6  Cellular responses to DNA damage (Welsh)
- Feb 8  Public Health example – Chernobyl & thyroid cancer (Figge)

Feb 13 – 27: Molecular Basis of Cancer II: Cancer Genes
- Feb 13-20  Oncogenes and Tumor Suppressor Genes (Welsh)
- Feb 22  Familial Cancers (Welsh)
- Feb 27  Epigenetics (Tenniswood)

Feb 29: Exam 1

Mar 5 –26: Cell Biology of Cancer
- Mar 5  Cell Cycle Control (Conklin)
- Mar 7  Immortality and Senescence (Conklin)
- Mar 12-14  No class, Break
- Mar 19  Cancer Metabolism (Conklin)
- Mar 21  Negative Growth Regulation: Differentiation and Apoptosis (Welsh)
- Mar 26  Tumor Stem Cells (Sell)

Mar 28: Exam 2

Apr 2 – April 18: Tumor – Host interactions and Cancer Progression
- Apr 2  Extracellular Matrix, Stromal-epithelial interactions (Tenniswood)
- Apr 4  Angiogenesis (Welsh)
- Apr 9  No class (Easter break)
- Apr 11  Metastasis (Welsh)
- Apr 16  Tumor Immunology (Sell)
- Apr 18  Hepatocellular carcinogenesis (Sell)

Apr 23 – May 7: Therapy and Prevention
- Apr 23  Therapeutic approaches
- Apr 25  Cancer Prevention
- Apr 30  Student presentations
- May 2  Student presentations
- May 7  Student presentations

Final Exam