Biology of Cancer is designed to illustrate basic aspects of cancer development, and to discuss how molecular genetic approaches can be used to reveal fundamental processes of carcinogenesis. Such molecular cellular and genetic information has been instrumental in devising strategies for prevention, detection, and treatment of cancer.

Grades will be mainly based on two exams and two quizzes. Make-up exams are EXTREMELY discouraged and will be dealt with on a case-by-case basis. A written explanation or official document is required in order for make-up exams to be considered. Students are expected to be aware of and in compliance with the university academic integrity policy, which can be found at http://www.science.psu.edu/academic/Integrity/index.html.

Exam/Quiz:
Exam #1: June 4, 2010 (45%)
Quiz #1: June 10, 2010 (5%)
Quiz #2: June 17, 2010 (5%)
Exam #2: June 25, 2010 (45%)

Text: The Biology of Cancer
First Edition, by Robert A. Weinberg
Publisher: Garland Science
I. Cancer development:

May 17 M  
No class – (the instructor needs to give a lecture at Hershey)

May 18 T  
1. Genetic, cellular and molecular concepts/Techniques (Chapter 1)

May 19 W  
2. Basic aspects about cancer (Chapter 2)

May 20 R  
3. Carcinogens/Tumor viruses (Chapters 2 & 3)

May 21 F  
4. Multi-step carcinogenesis/Angiogenesis (Chapters 11 & 13)

II. Molecular and genetic basis of cancer:

May 24 M  
5. Invasion and Metastasis (Chapter 14)

May 25 T  
6. Oncogenes (Chapter 4)

May 26 W  
7. Growth factors and receptors (Chapter 5)

May 27 R  
8. Tumor suppressor genes (I) (Chapter 7)

May 28 F  
9. Tumor suppressor genes (II) (Chapter 7)

May 31 M  
Memorial Day – No Class

June 1 T  
10. CDK regulation by Cyclin binding/phosphorylation (Chapter 8)

June 2 W  
11. CDK regulation by CDK inhibitors/RB and E2Fs (Chapter 8)

June 3 R  
12. REVIEW

June 4 F  
13. EXAM I (45%)

June 7 M  
14. Cell death signaling and cancer (I) (Chapter 9)

June 8 T  
15. Cell death signaling and cancer (II) (Chapter 9)

June 9 W  
16. Cellular signaling and cancer (Chapter 6)

June 10 R  
17. Cell immortalization & tumorigenesis (Chapter 11) Quiz #1 (5%)

June 11 F  
18. DNA repair defects can lead to cancers (Chapter 12)

III. Prevention, detection and treatment of cancer:

June 14 M  
19. Cell transformation requires multiple genes (Chapter 11)

June 15 T  
20. Prevention, early detection & genetic testing for cancer risk

June 16 W  
21. Surgery/radiation therapy/chemotherapy

June 17 R  
22. The rational of treatment of cancer (I) (Chapter 16) Quiz #2 (5%)

June 18 F  
23. The rational of treatment of cancer (II) (Chapter 16)

June 21 M  
24. Tumor immunology and immunotherapy (Chapter 15)

June 22 T  
25. Yeast & fruit fly models of human cancer

June 23 W  
26. Mouse model of human cancer/Delivery of medicine to tumors

June 24 R  
27. REVIEW

June 25 F  
28. EXAM II (45%)