SYLLABUS
BILD 32 Biology of Cancer

Fall 20
Instructor: Michael Burg, Ph.D.
Email: mburg@ucsd.edu
ZOOM Office Hours: tbd

LECTURES WILL BE ASYNCHRONOUS

Course Description: This is an introductory course that examines the basic biology of cancer and the approaches currently taken in cancer treatment. Basic principles of cell biology and genetics are explored to unravel the mechanisms of cancer development and the development of effective cancer therapeutics. The course emphasizes the process of scientific inquiry to illustrate how cancer biologists gather and analyze data in order to better understand and treat this disease estimated to be the number two killer in the US. The course is intended for all that want to learn about the types of cancer, causes of cancer, treatments of cancer, and the social impact of this disease on patients, families and society. Topics that are emphasized in this course include the fundamental causes of cancers and basic preventative measures. Lectures will emphasize the scientific approach.

Course Objectives: Upon successful completion of the course the student will be able to:

1. Describe the basic preventative measures available to lower the risk of cancer development.
2. List the basic risk factors associated with the development of cancer (genetic and environmental).
3. Describe the major types of cancer and the relative incidence and mortality risks associated with the major.
4. List examples of mutations that develop in the six basic pathways of cancer development: The Hallmarks of Cancer: Oncogenes, tumor suppressors, avoidance of cell death, avoidance of cellular senescence, acquisition of new blood vessels, acquisition of metastatic capability.
5. Describe the basic techniques used to study cancer including cell culture, animal models, genomics, and proteomics.
6. Read and analyze cancer literature detailing the current approaches in the treatment of cancer including chemotherapy, immunotherapy, and anti-angiogenic therapy.
7. Read and analyze cancer literature from scientific periodicals.
8. Recognize and evaluate the differences between normal cells and cancer cells.
9. Describe the process by which a potential anti-cancer therapeutic must take to gain FDA approval.
10. Examine the socio-economic impact cancer has on families and society.

Required Texts, Materials, and Web-Enhancement

- ***NONE*** …
  - All powerpoints, lectures, associated handouts, and other relevant material are available ***via Canvas***
  - *Check for announcements on* ***Canvas***
  - *Instructional Assistants/Tutors: Names,sections, and contact information will be posted* ***via Canvas***

- **, class ethics, and additional considerations**

1- **Academic dishonesty and plagiarism (the unauthorized or uncredited use of someone else's work) will result in a grade of "F" for the assignment. Its continued practice will be reported to the appropriate deans for possible disciplinary action and will result in an "F" for the course.**

GRADING

Exams

1. **There will be 3 exams (each worth 120 points) on the material stipulated in the study sheets. There is no cumulative final. Exams will be open a 12 hr period (9am-9pm) on the day the exam is scheduled. Once you begin the exam, you will be given 2 hours to complete the exam. It will be mostly multiple choice with some short answer questions.**

Other assignments

- **There will be various graded assignments that will be worth *around 160* points. Those will *generally* be due by Sunday midnight of the week that it is due.**

Sections: Attendance Recommended but not required
Extra Credit: 4 extra points for >80% CAPE response rate

Grading summary and calculation:

Written Exams (3 x120)	**360**
Assignments	**around 160**
TOTAL POINTS	**around 520**

Letter grades will be assigned as follows:

Your grade is based upon a percentage of the total points you accumulate during the semester.

A^+ = 99% - 100% of the total possible points
A= 90% - 98.9% of the total possible points
B^+ = 89% - 89.9% of the total possible points
B = 80% - 88.9% of the total possible points
C^+ = 79% - 79.9% of the total possible points
C = 70% -78.9% of the total possible points
D = 60% -69.9%of the total possible points
F = Less than 60% of the total possible

week	Date	Lecture Topic	TENTATIVE Assignments
0	Thu 10/1	What is cancer? General introduction and overview.	
1	10/5-10/11	Naming,Grading,Staging Cancer Hallmarks of cancer Causes of Cancer; HPV and vaccines	**1. Discussion: Entry personal experience of cancer; Read and respond to two classmate's entries: Due Sunday 10/11 by midnight**
2	10/12-10/18	Scientific method and cancer epidemiology How does cancer arise? Normal cell cycle and tissue structure.	**2. Complete worksheet on HPV vaccines and submit to Turnitin by Sunday midnight 10/18**
3	10/19-10/25	Review for exam **Exam#1 (Thursday 10/23: Available 9am-9pm)**	
4	10/26-11/1	How does cancer arise? The hallmarks of cancer: Oncogenes How does cancer arise? The hallmarks of cancer: Tumor Suppressors	**3. Epidemiology study due by Sunday midnight 11/1**
5	11/2-11/8	Angiogenesis: New blood vessel growth	**4. Watch Video: Cancer warrior and read articles Complete worksheet and submit by Sunday midnight 11/15**
6	11/9-11/15	How does cancer spread? Metastasis	
7	11/16-11/22	Review for exam ***Exam #2*** **(Thursday 11/19: Available 9am-9pm)**	
8	11/23-11/19	**Watch Cracking Cancer video; Holiday**	
9	11/30-12/6	Cancer screening,diagnostics, and treatments	**5. Watch Video: Cancer Story: Complete worksheet and submit by Sunday midnight 12/6**
10	12/7-12/12	Cancer screening,diagnostics, and treatments Review for exam	**6. Final Cancer paper due by Sunday midnight 12/13**
	Finals week	***Exam #3*** **(Thursday 12/17: Available 9am-9pm)**	