

# BIO 360 – The Biology of Cancer

## Fall, 2008 Syllabus

**Instructor:** Dr. André Walther  
Miller Building 25, x3513  
awalther@cedarcrest.edu

**Office hours:** Monday, Wednesday 10 AM - 11 PM, or by appointment

**Class time & place:** Tuesday, Thursday 8:00 – 9:15 AM (3 credits),  
SCI138

**Required Text:** Principles of Cancer Biology Lewis J. Kleinsmith Benjamin Cummings 1<sup>st</sup> Ed. The Course will also be based on primary literature and review articles that will be supplied by Dr. Walther via eCollege.

**Prerequisites:** BIO222 and BIO231

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**Course Description:** This course covers the genetics, molecular biology, and cellular biology of cancer from DNA mutagenesis to cellular transformation. We will try to answer the following questions: What is cancer? What causes cancer? How can cancer be treated? Specific Topics to be covered include maintenance of genomic integrity, cell-cycle control, oncogenes and tumor suppressors, metastasis, and anti-cancer treatment strategies. The course will rely heavily on the primary literature with a special focus on current topics in Cancer Biology.

### Objectives

The objectives for students in this course are to:

- Achieve a detailed understanding of the molecular biology of cancer.
- Understand how cancer arises and spreads.
- Gain experience in critically reading primary scientific literature.
- Develop expertise in logical problem solving.

### Course Outcomes

Upon successful completion of the course, students will:

- Demonstrate the ability to engage in scientific reasoning by interpreting and discussing primary scientific literature.
- Demonstrate the ability to communicate these concepts orally and in writing.

## **Assessment**

The outcomes described above will be assessed through:

- Written exams: scientific / quantitative reasoning, written communication ability
- Oral presentations: scientific reasoning, oral communication ability
- Class participation: oral communication ability

## **Student Responsibilities**

### **Readings:**

The reading materials are integral to this course. Readings must be completed prior to class in order to facilitate student discussion. Failure to come prepared to class will impact participation grades. You are responsible for all material in the assigned reading, whether or not it is discussed in lecture. Anything in the assigned reading or lecture notes is fair game for exams.

### **Attendance:**

It is strongly recommended that you attend class. A significant portion of your grade involves your class participation. Repeated absences will negatively affect your participation grade.

### **Scholarship and Integrity:**

I fully support the Cedar Crest College Honor Code and the Classroom Protocol code as stated in the Customs Book. You are required to abide by the Honor Code and by accepted practices of scholarship and integrity. All writing and other material that you submit must be your own, original work, unless otherwise acknowledged. Material that is quoted from another source must be clearly indicated as a quotation and must be followed immediately by a citation to the original source. Paraphrasing is not acceptable as original work; editing someone else's writing does not make it your own work. Cheating or plagiarism will result in a grade of F for the assignment or the entire course, at the instructor's discretion. If you have any questions about these issues, please discuss them with an instructor.

### **Classroom protocol:**

The Honor Code states, "Appropriate classroom behavior is implicit in the Cedar Crest Honor Code. Such behavior is defined and guided by complete protection for the rights of all students and faculty to a courteous, respectful classroom environment. That environment is free from distractions such as late arrivals, early departures, inappropriate conversations and any other behaviors that might disrupt instruction and/or compromise students' access to their Cedar Crest College education."

**Students with Disabilities:**

Students with documented disabilities who may need academic accommodations should discuss these needs with their professors during the first two weeks of class. Students with disabilities who wish to request accommodations should contact the Advising Center.

**Assignments and Evaluation****Exams (400 pts)**

Each of the two 200 pt, in-class exams during the semester will cover reading and lecture material since the previous exam.

**Exam #1: Wednesday, October 10**

**Exam #2: Monday, November 19**

**Comprehensive Final Exam (200 pts)**

The comprehensive final exam will include course material from throughout the semester and final presentations.

**Date: TBA**

**Informal Paper Discussion Leader (100 pts)**

Students will choose a paper from a list provided by Dr. Walther. They will be responsible for a brief informal description of the main technique described in the paper. Choice of paper and Dates of presentations TBA.

**Final Presentation (200 pts)**

Students will choose a topic of interest relating to cancer treatment and give a formal 20 min PowerPoint presentation on the topic. Late delivery of assignments will result in a loss of points.

- Topic due (topic can not be changed later): Friday, Sept. 14
- Hard copies of 5 primary research articles due: Friday, Oct. 19
- Draft of PowerPoint (electronic copy): Friday, Nov. 16 (11:59 PM)
- 20-minute MS PowerPoint presentation: Monday, Nov 26 - Friday, Dec. 10

**Class Participation (100 pts)**

Class participation and adherence to the classroom protocol may affect your participation grade. The participation grade will be determined solely at the discretion of the instructor.

**There will be NO extra credit assignments, so make your points count.**

**Make-up policy for exams:**

If you miss an exam due to illness or emergency that has been documented through the Dean of Student Affairs' office, you must contact the

instructor as soon as possible to arrange a make-up exam. Make-up exams will not be given for any other reason. Please note that make-up exams may be of a different format than the main exam given in class.

Your obligations for this course include attendance at the final exam, on the day and time scheduled by the Registrar's Office. You should not make travel arrangements until the final exam schedule is published; if you must make plans early, you should schedule your travel after the last final exam day.

**Course Grading:**

The course grade will be calculated to the nearest 0.1%, and the letter grade determined by the table below. Late assignments will be deducted 10% per calendar day, including weekend days.

**Grading Scale:**

A	93.0 - 100%	C	73.0 - 76.9%
A-	90.0 - 92.9%	C-	70.0 - 72.9%
B+	87.0 - 89.9%	D+	67.0 - 69.9%
B	83.0 - 86.9%	D	60.0 - 66.9%
B-	80.0 - 82.9%	F	< 60.0%
C+	77.0 - 79.9%		

**Grading Disputes:**

*What the instructor giveth, he may also taketh away.* If a student has an issue about the grading of specific questions, I will be more than willing to hear them out, however by asking the instructor to modify the grading on a specific question, he reserves the right to regrade the entire exam.

**Your Keys to Success:**

There is a large body of material to learn in this course. To learn successfully, you will need to attend the lectures, read the text and other assigned readings, and study effectively. You need to put in the effort, but help is available. Always feel free to ask questions!

**Schedule: Subject to change**

<b>Lecture</b>	<b>Date</b>	<b>Topic</b>	<b>Readings</b>
1	Tue 8-26	Syllabus/Cancer Statistics	
2	Thu 8-28	What is Cancer?	Chapter 1
3	Tue 9-2	Cancer Cells Characteristics/Cell Cycle/CC <b>Paper</b>	Chapter 2
4	Thu 9-4	Cancer Cells/Apoptosis/Immunology	Chapter 2
5	Tue 9-9	Invasion and Metastasis	Chapter 3
6	Thu 9-11	Invasion and Metastasis/ <b>Angiogenesis Paper</b>	Chapter 3
7	Tue 9-16	Invasion and Metastasis/ <b>Cancer Stem Cell Paper</b>	Chapter 3
8	Thu 9-18	Causes of Cancer/ <b>Ames test Paper</b>	Chapter 4
9	Tue 9-23	Chemicals and Cancer	Chapter 5
10	Thu 9-25	Chemicals and Cancer/	Chapter 5
11	Tue 9-30	Radiation and Cancer	Chapter 6
12	Thu 10-2	Radiation and Cancer/ <b>Jasin Paper</b>	Chapter 6
13	Tue 10-7	<b>EXAM I</b>	
14	Thu 10-9	Infectious Agents and Cancer	Chapter 7
NO CLASS	Tue 10-14	<b>Fall Break</b>	
15	Thu 10-16	Infectious Agents and Cancer/ <b>Kaposi Paper</b>	Chapter 7
16	Tue 10-21	Heredity and Cancer/ DNA Repair	Chapter 8
17	Thu 10-23	Heredity and Cancer/ DNA Repair/ <b>2hit Paper</b>	Chapter 8
18	Tue 10-28	Heredity and Cancer/ DNA Repair/ <b>BRCA1 Powell</b>	Chapter 8
19	Thu 10-30	Oncogenes	Chapter 9
20	Tue 11-04	Oncogenes/ <b>Philadelphia</b>	Chapter 9
21	Thu 11-06	Tumor Supressors	Chapter 10
22	Tue 11-11	Tumor Supressors	Chapter 10
23	Thu 11-13	Cancer Screening/Diagnosis// <b>RB SKY Paper</b>	Chapter 11
24	Tue 11-18	Preventing Cancer	Chapter 12
25	Thu 11-20	<b>EXAM II</b>	
26	Tue 11-25	Final Presentations	Chapter 11
NO CLASS	Thu 11-27	<b>Gobble Gobble</b>	
27	Tue 12-2	Final Presentations	Chapter 11
28	Thu 12-4	Final Presentations	Chapter 11
	TBA	<b>Comprehensive Final Exam</b>	