

Biology 407 – Cancer Cell Biology
Spring 2023 – Tu/Th 1:45-3:14 PM
Goddard 101

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Course overview:

Biol 407 will investigate the biological basis of cancer, focusing on the mechanisms underlying cellular transformation, tumor evolution, and therapy. We will discuss key concepts and then drill more deeply into specific representative examples.

The course will meet for 90 minutes every Tuesday and Thursday afternoon. Classes will be a combination of lecture/discussion and small group work. Reading and analyzing the current research literature is a major component of the course, and you will be assigned one primary research paper each week, along with at least one review paper for background. All papers, slides, and other course materials will be posted on the class Canvas site.

On **Tuesdays**, I will present material for approximately 45 minutes, after which each learning team will be assigned one figure from the assigned paper. Learning teams will spend the remainder of Tuesday's class working together to analyze their assigned figure from the paper, reviewing the techniques involved, assessing the figure's strengths and potential limitations, and discussing how it contributes to the overall argument.

On **Thursdays**, the first part of class will again be lecture/discussion, leaving at least 45 minutes for each learning team to each present their figure analysis to the class. The intent is to create a friendly, inquisitive, and stimulating discussion, and questions are greatly encouraged. Ideally, each student will present twice during the semester.

There is no textbook *per se* for the class, but Robert A. Weinberg's seminal book, *The Biology of Cancer*, will be on reserve at the library and will likely prove a helpful resource.

Reading assignments: As mentioned above, I will assign a primary research paper each Thursday after class, to be discussed the following week, as well as at least one related review paper (and online material) for context.

Midterm exams: There will be three 40-minute midterm exams (tentatively **February 9, March 21, and April 25**), each of which will cover material from class sessions since the previous exam. We will use the second part of the preceding class (2/7, 3/16, and 4/20) as a review session.

Final paper: you will choose a recent primary basic (not clinical) cancer research paper of interest to you and not discussed in class and write a critique (no more than 5 pages, Arial 11, double spaced), as if you were reviewing a manuscript for publication. You will discuss the significance of the paper, its strengths, and potential shortcomings or limitations. We'll go over all this in detail in class. Papers are due **April 13**.

Final grades will be based on participation during the learning team discussions and presentations (20%), midterm exams (20% each), and your final paper (20%).