

INTRODUCTION TO CANCER

01:447:245; SPRING SEMESTER 2025

Professor: Dr. Tara Cominski

Office Location: Busch Lab Center, Rm 101

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**CLASS MEETS ON WEDNESDAY 12:10-1:30 PM AND FRIDAY 2:00-3:20 PM;
ENGINEERING B-120, BUSCH CAMPUS**

- Here is a link to the Rutgers map: <https://maps.rutgers.edu/>
- We will meet in-person for class during our designated meeting times as described above. **All course materials will be available and delivered through CANVAS.**

STUDENT SUPPORT HOURS (ZOOM OR IN-PERSON)

(BUSCH LAB CENTER RM 101)

Wednesday 10:45 – 11:45 AM

Friday 12:30 – 1:30 PM

- Best to send me an email before stopping by or logging onto my virtual office!
- ****If you would like to meet outside of these times, please email me.**

COURSE DESCRIPTION

Prerequisites

General Biology 119:115-116 or 119:101-102

Introduction to Cancer provides an overview of biomedical aspects of malignancy as deviations from the normal biological processes. It builds upon some topics covered in pre-requisite courses, including molecules, cells, tissues, and organisms; and expands upon concepts such as homeostasis and regulation. The course reviews how specific alterations in normal genetic, cellular, and physiological processes are altered in cancer, and how the human systems respond to cancer cells and tumors. The clinical application of these facts and concepts for diagnosis, prognosis, prevention, and personalized therapy are discussed. Some specific cancer types are selected as examples, such as breast cancer, prostate cancer, colon cancer, melanoma, leukemia,

and others. Current unmet medical challenges and possible future solutions are included.

Subjects that will be addressed during the course may include:

- Biology and genetics of cells and organisms
- The nature of cancer
- Cellular and viral oncogenes
- Oncoproteins: receptors, signal transduction, cell cycle control
- Tumor suppressor genes
- Tumor progression and tumor evolution
- Tumor heterogeneity and tumor microenvironment
- Invasion and metastasis
- Cancer Treatment

REQUIRED TEXTS AND COURSE MATERIALS

- **A notebook and pen/pencil to complete in class participation activities!!**
- **The Biology of Cancer (3rd edition)**, Robert Weinberg; ISBN: 978-0-393-69021-7 (paperback); hardcover and loose-leaf versions are also acceptable.
- **The Biology of Cancer (2nd edition)**, Robert Weinberg; ISBN: 978-0-8153-4219-9 (hardcover); paperback and loose-leaf versions are also acceptable (this edition is similar and will still help with understanding the material)
- A copy of the textbook is also available through university libraries and on reserve at the Library of Science and Medicine on Busch Campus; at front desk under “Cominski”

TECHNICAL / TECHNOLOGY REQUIREMENTS

- **Mobile device or laptop: Students must have access to their own personal laptop or tablet during class. Students will regularly use Canvas to complete in-class quizzes, activities/assignments and exams.**
- In addition, other types of technology (i.e. *Socrative*) may be used to allow students to actively engage in class and enable the professor to assess student understanding.
- **If you do not have the appropriate technology for financial reasons, please email the Dean of Students at deanofstudents@echo.rutgers.edu for assistance. If you are facing other financial hardships, please visit the Office of Financial Aid: <https://financialaid.rutgers.edu/>.**
- Please visit the Rutgers Student Tech Guide website for resources: <https://it.rutgers.edu/technology-guide/students/#new-brunswick>

LEARNING GOALS

Course Satisfies Departmental Learning Goals:

- Knowledge specific goals: Know the terms, concepts and theories in genetics.
- Integrate the material from multiple courses and research. That is, to think holistically and to see the whole as well as the parts=

GRADING SCALE

⇒ A = 92 and above

⇒ B+ = 87-91

⇒ B = 80-86

⇒ C+ = 75-79

⇒ C = 70-74

⇒ D = 60-69

⇒ F = 59 or below

⇒ Warning grades will be entered for those students who are exhibiting poor performance or poor attendance.

******Letter grades will be determined based on the course total percentage calculated on Canvas and the scale above; I will not round up!!***

ASSESSMENT / GRADING COMPONENTS

Weighting of Assessments

The final course grade will be determined by the following criteria:

- **70%- Exams** (4 exams total; the 4th exam will be given during the final exam period, will contain some content from earlier in the semester, but will not be entirely cumulative)
 - **10% - Participation Assignments/Activities** – there will be an assignment given each class; these assignments can only be completed in class and **cannot be made up**; I will drop the lowest 2 participation assignments (i.e. you can miss 2 classes without any impact on this portion of your grade). If the assignment is complete and submitted on time, i.e., no missing components, you will receive full credit. **In-class activities will be due by the end of class that day; I will use index cards and collect them for some classes! I will leave most assignments open until midnight that night for late submissions, if necessary. 20 points will be deducted from any assignment submitted after the end of class but before**

midnight. Assignments that are not submitted by midnight will not be accepted and will receive a zero.

- **20%- Quizzes/Assignments** – A graded quiz will be given through Canvas for each lecture (depending on the size of the lecture a quiz may combine two or more lectures); *****most quizzes will be completed in class through Canvas, on the student's personal laptop or tablet.**

** Grades will be calculated using the gradebook in Canvas; this information will be available to students throughout the semester. if you have a question about a grade, please ask ASAP. I do make mistakes!!

**All assignments, quizzes and exams will be delivered and submitted through Canvas. All grades will be posted on Canvas!

SCHEDULE OF TOPICS

***This will be updated regularly on our course canvas site; please check the Canvas site for updates, including exams dates; do not use the syllabus for this information

***All lectures and related material will be available on Canvas; All exam questions will come from the lectures and supplementary material covered in class

Week 1 (1/22-1/24)

Course Introduction

Week 2 (1/29-1/31)

Magic Bullets Video

Chapter 1: The Biology and Genetics of Cells and Organisms

Week 3 (2/5-2/7)

Chapter 2: The Nature of Cancer

Week 4 (2/12-2/14)

Chapter 3: Tumor Viruses

Review for Exam 1

Week 5 (2/19-2/21)

EXAM 1 – WEDNESDAY 2/19

Chapter 4: Cellular Oncogenes

Week 6 (2/26-2/28)

Chapter 5: Growth Factors, Receptors, and Cancer

Week 7 (3/5-3/7)

Chapter 6: Cytoplasmic Signaling Circuitry Programs Many of the Traits of Cancer
Exam 2 Review

Week 8 (3/12-3/14)

EXAM 2 – WEDNESDAY 3/12

Chapter 7: Tumor Suppressor Genes
Blind Men and the Elephant Video

SPRING BREAK 3/17-3/21

Week 9 (3/26-3/28)

Chapter 8: pRb and Control of the Cell Cycle Clock

Week 10 (4/2-4/4)

Chapter 9: p53 and Apoptosis

Week 11 (4/9-4/11)

Exam 3 Review

EXAM 3 FRIDAY 4/11

Week 12 (4/16-4/18)

Chapter 11: Multi-Step Tumorigenesis
Achilles Heel Video

Week 13 (4/23-4/25)

Chapter 14: Invasion and Metastasis

Week 14 (4/30-5/2)

Chapter 15: Tumor Immunology and Immunotherapy
Chapter 16: The Rational Treatment of Cancer
Review for Final Exam

REGULAR CLASSES END MAY 5TH

Reading Days MAY 6TH AND 7TH

FINAL EXAM (EXAM 4) – TUESDAY MAY 13TH AT 9:00 AM

POLICIES

ATTENDANCE, PARTICIPATION AND MISSED ASSIGNMENTS

- **Students are expected to attend class regularly;** quizzes, review questions and other activities to support the lectures will take place during each class and will count toward the final grade. In addition, these exercises serve to enhance student learning and are necessary to succeed in this course. **10% of the grade comes from participation activities; these are completion grades and are always due by the end of class that day.**
 - **Makeups will not be given for these assignments!! – this is meant to be beneficial to students who attend class regularly; this is not a penalty for a missed class.**
 - **STUDENTS ARE NOT ENTITLED TO A 100% FOR THIS PORTION OF THE GRADE IT IS EARNED BY ATTENDING CLASS!!!!**
 - **DO NOT EMAIL ASKING FOR A MAKE UP**
 - **I WILL DROP 2 GRADES TO ACCOUNT FOR A FEW MISSED CLASSES**
 - **FOR MOST ASSIGNMENTS THERE WILL BE AN OPPORUNITY TO SUBMIT THE ASSIGNMENT UNTIL MIDNIGHT**
- If you need to miss class or need extra time to complete an assignment, please email me ahead of time and we will work together to construct a plan to make-up the missed work. If you do not communicate with me about a missed quiz, exam, or assignment and contact me well after the due date, **a make-up will not be possible. Make-ups for Quizzes and Exams are at the discretion of the professor and may not be granted!**
- Students with prolonged health and/or financial issues impacting their academics and well-being over an extended period should contact the Dean of Students at deanofstudents@echo.rutgers.edu.
- [Link to Rutgers Policy on Attendance and Cancellation of Classes](#)

EXPECTATIONS:

For Students:

- Be fully (well at least almost fully) present/engaged
- Be respectful – one voice, but it is okay to disagree!
- Ask questions
- Share your experiences and expertise
- **Attend class regularly – Why do you think I care about this??**

- Make mistakes, but own them; I do it all the time...
- Be late (sometimes)
- Miss an assignment
- Miss a class
- Be interested

For the Instructor:

- Be respectful – one voice, but it is okay to disagree!
- Ask questions
- Share your experiences and expertise
- Make mistakes, but own them
- Be prepared
- Be responsive
- Be late (sometimes)
- Miss an email
- Forget to post a quiz or assignment
- Miss a class
- Be fair
- Provide the opportunity and environment for **ALL** students to **learn**
- Be engaged and enthusiastic

DISABILITY ACCOMMODATIONS

- To receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation.
- **Please see me before or after class to confirm that I have received your accommodation form and to discuss expectations.**
- Please review the policies and procedures of the Office of Disability Services website: <https://ods.rutgers.edu> for additional information

ACADEMIC INTEGRITY

- Please familiarize yourself with the University website on Academic Integrity: [Academic Integrity Policy Link](#)
- Rutgers University takes academic dishonesty very seriously. By enrolling in this course, you assume responsibility for familiarizing yourself with the Academic Integrity Policy and the possible penalties (including suspension and expulsion) for violating the policy. As per the policy, all suspected violations will be reported to the Office of Student Conduct. Academic dishonesty includes (but is not limited to):
- Cheating

- Plagiarism
- Aiding others in committing a violation or allowing others to use your work
- Failure to cite sources correctly
- Fabrication
- Using another person's ideas or words without attribution (**this includes AI**), including re-using a previous assignment Unauthorized collaboration
- Sabotaging another student's work

If you are ever in doubt, consult your instructor.

STUDENT SUPPORT AND MENTAL WELLNESS

⇒ **Here is a list of Rutgers resources to support students in their academic success and mental wellness.**

- Student Success Essentials: <https://success.rutgers.edu/>
- Student Support Services: <https://www.rutgers.edu/academics/student-support>
- The Learning Centers: <https://rlc.rutgers.edu/>
- The Writing Centers (including Tutoring and Writing Coaching): <https://writingctr.rutgers.edu>
- Rutgers Libraries: <https://www.libraries.rutgers.edu/>
- Office of Veteran and Military Programs and Services: <https://veterans.rutgers.edu>
- Student Health Services: <http://health.rutgers.edu/>
- **Counseling, Alcohol and Other Drug Assistance Program & Psychiatric Services (CAPS):** <http://health.rutgers.edu/medical-counseling-services/counseling/>
- Office for Violence Prevention and Victim Assistance: www.vpva.rutgers.edu/