

INTRODUCTION TO CANCER

Course: 01:447:245, Section 01, Index 05877, 3 credits, Fall 2020
Prerequisite: General Biology 01:119:115-116 or equivalent.
Other courses: Credit not given for both this course and Cancer 447:495.
As elective: Fulfills elective requirements of Biological Sciences Major, but not Genetics Major.
Time: Tues (1:40-3:00 PM), Thurs (1:40-3:00 PM)
Location: Lectures, videos, discussions: remote, synchronous, live. Zoom URL link on Canvas
Quizzes and Exams: course management system, Canvas, <http://canvas.rutgers.edu>
Instructor: David E. Axelrod, Department of Genetics, Email: axelrod@biology.rutgers.edu
Office Hours: Tues 3:15-3:45 PM, Thurs 3:15-3:45 PM. Canvas Scheduler.
Grade: Three evenly weighted exams, each 70 minutes in length

THE CANCER PROBLEM

Sept 1 Tues Lecture: Preview of the Course
3 Thurs Introduction & Discussion: Magic Bullets Video
8 Tues No Class. Monday Classes
10 Thurs Lecture: Biology and Genetics of Cells and Organisms, Weinberg Ch 1
15 Tues Introduction & Discussion: Magic Bullets Video con't
17 Thurs Lecture: The Nature of Cancer, Weinberg, Ch. 2, pp. 29-50
22 Tues Introduction & Discussion: The Blind Man and the Elephant Video
24 Thurs Lecture: The Nature of Cancer, Weinberg, Ch. 2, pp. 50-69
29 Tues Introduction & Discussion: The Blind Man and the Elephant Video con't
Oct 1 Thurs Lecture: Tumor Viruses, Weinberg Ch. 3
6 Tues Introduction & Discussion: Finding an Achilles Heal Video
8 Thurs Review for Exam 1
13 Tues Exam 1 (5 weeks, 5 lectures, 3 Chapters, 5 videos)

CANCER GENES, PROTEINS, AND CELLS

15 Thurs Lecture: Oncogenes, Weinberg, Ch. 4
20 Tues Introduction & Discussion: Finding an Achilles Heal Video con't
22 Thurs Lecture: Growth Factors, Receptors, and Cancer, Weinberg Ch. 5
27 Tues Lecture: Cytoplasmic Signaling, Weinberg Ch. 6
29 Thurs Lecture: Tumor Suppressor Genes, Weinberg Ch. 7
Nov 3 Tues Lecture: pRb and Control of the Cell Cycle Clock, Weinberg Ch. 8
5 Thurs Review for Exam 2
10 Tues Exam 2 (3 weeks, 5 lectures, 5 chapters, 1 video)

HUMAN CANCER, DIAGNOSIS AND THERAPY

12 Thurs Lecture: p53 and Apoptosis, Weinberg Ch. 9
17 Tues Lecture: Multi-step Tumorigenesis, Weinberg Ch. 11
19 Thurs Lecture: Moving Out: Invasion and Metastasis, Weinberg Ch. 14
24 Tues Lecture: The Rational Treatment of Cancer, Weinberg Ch. 16
26 Thurs No Class. Thanksgiving
Dec 1 Tues Lecture: Breast Cancer, Colon Cancer: diagnosis and therapy
3 Thurs Lecture: Medical Statistics and Clinical Trials
7 Tues Review for Exam 3
10 Thurs Course Summary, Cancer Highlights, Last Class
Exam 3 (4 weeks, 6 lectures, 4 chapters)
To be scheduled during Exam week Dec 15-22, 2020

August 10, 2020. Subject to revision

INTRODUCTION TO CANCER
Assignments in Canvas

<u>Date Due</u>	<u>Subject</u>	<u>Canvas Type</u>
Wed Sept 2, 5:00 PM	What do you want to get out of this course? What is cancer?	Ungraded survey Ungraded survey
Fri Sept 11, 5:00 PM	Ch 1 Biology & Genetics of Cells & Organisms Example Exam Question	Practice Quiz, Ungraded
Fri Sept 18, 5:00 PM	Ch 2 The Nature of Cancer, pp. 29-50 Example Exam Question	Practice Quiz, Ungraded
Fri Sept 25, 5:00 PM	Ch 2 The Nature of Cancer, pp. 50-69 Example Exam Question	Practice Quiz, Ungraded
Fri Oct 2, 5:00 PM	Ch 3 Tumor Viruses Example Exam Question	Practice Quiz, Ungraded
Tues Oct 13 1:40-3:00 PM	Exam I	Graded Quiz
Fri Oct 16, 5:00 PM	Ch 4 Oncogenes Example Exam Question	Practice Quiz, Ungraded
Fri Oct 23, 5:00 PM	Ch 5 Growth Factors, Receptors, and Cancer Example Exam Question	Practice Quiz, Ungraded
Wed Oct 28, 5:00 PM	Ch 6 Cytoplasmic Signaling Example Exam Question	Practice Quiz, Ungraded
Fri Oct 30, 5:00 PM	Ch 7 Tumor Suppressor Genes Example Exam Question	Practice Quiz, Ungraded
Wed Nov 4, 5:00 PM	Ch 8 pRb and Control of the Cell Cycle Example Exam Question	Practice Quiz, Ungraded
Tues Nov 10 1:40-3:00 PM	Exam 2	Graded Quiz
Fri Nov 13, 5:00 PM	Ch 9 p53 and Apoptosis Example Exam Question	Practice Quiz, Ungraded
Wed Nov 18, 5:00 PM	Ch 11 Multi-step Tumorigenesis Example Exam Question	Practice Quiz, Ungraded
Fri Nov 20, 5:00 PM	Ch 14 Moving Out: Invasion and Metastasis Example Exam Question	Practice Quiz, Ungraded

Wed Nov 25, 5:00 PM	Ch 16 The Rational Treatment of Cancer Example Exam Question	Practice Quiz, Ungraded
Wed Dec 2, 5:00 PM	Breast Cancer, Colon Cancer: Diagnosis and Therapy Example Exam Question	Practice Quiz, Ungraded
Thurs, Dec 4, 5:00 PM	Medical Statistics and Clinical Trials Example Exam Question	Practice Quiz, Ungraded
To be scheduled during exam week	Exam 3	Graded Quiz

(Continued)

RESOURCES

- Textbook:** Required. The Biology of Cancer, 2nd edition, 2014.
Robert A. Weinberg, Garland Science, NY. 876 pp, DVD-ROM and Poster.
ISBN: 978-0-8153-4220-5 (softcover).
Available from B&N RU Bookstore.
<https://rutgers.bncollege.com/shop/rutgers/home>
Used, rental, and eBook may be available at:
<http://store.vitalsource.com/show/978-0-8153-4220-5>
Copy on reserve at the Library of Science and Medicine. RC268.4 W45 2014
But the Library may be physically closed.
- Videos:** CANCER: Emperor of All Maladies. DVD ISBN:978-1-62789-2773
Videos can be viewed online free from the Alexander Street Press Platform,
Rutgers University Libraries:
Episode 1, Disk One: <https://bit.ly/36almm1>
Episode 2, Disk Two: <https://bit.ly/2WFE69Y>
Episode 3, Disk Three: <https://bit.ly/2WKl4zk>
- Canvas site:** <http://canvas.rutgers.edu>
The learning management system (LMS) Canvas will contain the following items:
Syllabus with schedule of topics and schedule of exams, Assignments in Canvas with
dates due, lecture slides available before the lecture, video track titles with
approximate times, recordings of live Zoom classes, and Announcements with the URL
to access the live Zoom lectures and discussions. Exams will be taken in Canvas as
“Graded Quizzes” and grades will be available on Canvas. A student guide to Canvas is
available at:
<https://canvas.rutgers.edu/students/getting-started-in-canvas-students/>
- Zoom:** Lectures, videos, and discussions will be synchronous, and live, using Zoom. The URL
for accessing the class on Zoom will be available as an Announcement on the course
Canvas site. Lectures will be recorded and available for viewing after class on the
course Canvas site. A short video on how to join a Zoom meeting can be found at:
https://www.youtube.com/embed/hlkCmbvAHQQ?rel=0&autoplay=1&cc_load_policy=1

EXPECTATIONS, FORMAT, AND HOW TO STUDY FOR THIS COURSE

This course is intended for Life Science majors or those with a strong background in the Biological Sciences.

Course summary. This course 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.

Technology: Students are expected to view and participate in each class using Zoom, Tuesday and Thursday 1:40 – 3:00 PM. A desktop or laptop computer with a webcam and audio capability, and internet access are necessary. The URL for Zoom will be available on the course Canvas site as an Announcement and set to students' default email address (if it hasn't been changed in Notifications). Information about Canvas and about Zoom can be found at the URLs listed above. Computer technical help is available from the Office of Information Technology, Email: help@oit.rutgers.edu or by phone [833-OIT-HELP](tel:833-OIT-HELP)

Format: During each class, the Instructor will give a lecture, ask questions, and lead a discussion of the assigned topic. The lectures will be synchronous live with the Instructor sharing his screen of PowerPoint lectures or video, and discussion with students using Zoom. The Zoom URL will be available before the scheduled lecture on the Canvas website as an Announcement. The PowerPoint slides for the lecture will be available before the lecture on Canvas. The Instructor's live lectures will be recorded for access on Canvas after the lecture. Students may use Canvas to schedule an appointment to meet with the Instructor during weekly office hours

How to study for this course: Students are expected learn by participating in each class remotely using Zoom, taking notes on the Instructor's lectures, reading and taking notes on the assigned chapters in the textbook, viewing and taking notes on the slides and videos, and reviewing all assigned material. Lecture slides will be available before class. Students are expected answer the Example Exam Questions listed in the PowerPoint slides for each lecture using Canvas ungraded "Practice Quiz". As a study-aid, students should write for themselves answers to the Study Questions listed in the PowerPoint slides. Students are responsible for all material assigned in the Syllabus, and covered during class. Updates and revisions to the Syllabus will be posted in the course Canvas site as Announcements and sent to the students via the email address listed in the course Canvas site.

Exams. There will be three exams used for calculating the final grade. These will be "closed book", the students should answer these questions using their own knowledge without aids from another person, and not additional information in any form. The first and second exams will each be held during a 70-minute scheduled class-time, the third exam will be held during the final exam week. Exams will be taken on the Canvas website as a "Graded Quiz", not on Zoom. Each exam will be of equal weight for the final grade. Students are expected to take each of the three exams. Each exam will cover the material since the previous exam as indicated in the Syllabus schedule. A makeup exam for one missed exam, will rarely be given only by permission and discretion of the Instructor for a documented extenuating circumstance, will cover the entire course and may, or may not, be scheduled during the final exam period.

ACADEMIC INTEGRITY POLICY

<https://policies.rutgers.edu/10213-currentpdf>.

Accessed June 22, 2020

Honor Pledge

To create a strong culture that promotes academic integrity, Rutgers has adopted the following honor pledge to be written and signed on examinations and major course assignments submitted for grading: ***On my honor, I have neither received nor given any unauthorized assistance on this***

examination or assignment. Participating in this class remotely, including quizzes and examinations, will be the equivalent to writing and signing the Honor Pledge.

Cheating

The use or possession of inappropriate or prohibited materials, information, sources, or aids in any academic exercise. Cheating also includes submitting papers, research results or reports, analyses, and other textual or visual material and media as one's own work when others prepared them.

Academic Penalties

Any violation of academic integrity is a serious offense subject to appropriate sanctions or penalties. Violations of academic integrity may result in academic penalties, educational sanctions, and/or disciplinary sanctions... including but not limited to the following, a grade of F in the course, suspension for one or more semesters, expulsion from the University with a permanent notation of disciplinary expulsion on the student's transcript.

STUDENT-WELLNESS SERVICES

Mental Health Services and Counseling

<http://rhscaps.rutgers.edu>

848-932-7884

Psychiatric Emergency

848-932-7884 (8:30 AM - 4:30 PM, Monday-Friday)

855-515-5700 (after 4:30 PM and Weekends)

Scarlet Listeners

Get things off your chest in a non-judgmental, empathetic space facilitated by trained students.

Sessions are held Monday-Thursday evenings during the Fall and Spring semesters.

Sign up for information about times and locations at tinyurl.com/SLGroupSessions or email

scarlet.listeners@gmail.com.

Disability services and accommodations

<https://ods.rutgers.edu/students/registration-form>

Victim Assistance, Violence Prevention (24/7)

<http://vpva.rutgers.edu>

848-932-1181

Student Health

<http://health.rutgers.edu/about-us/hours-locations/>

848-932-7402