

Biology 313: Cancer Biology Syllabus—Online

Course Overview:

General Info:

Instructor	=	Lindsay R. Dresang, Ph.D.
Lectures	=	Kaltura Capture Videos (asynchronous, loaded weekly)
Office hours	=	Tuesdays & Thursdays @ 1pm (or by appointment) <i>exceptions are/will be indicated in the Canvas calendar currently</i>
Contact	=	email-only (please use outlook), LDresang@uwsp.edu

Exam & Project Dates:	Exam #1 = 3/4;	Exam #2 = 4/20;	Exam #3 = 5/18
	Topic Selection = 2/11;	Rough Draft = 3/18;	Peer Reviews = 4/1;
	Brochure Check-In = TBD (1-on-1), weeks 12-14;	Final Reports & Brochures Due = 5/6	

Course Description: (Prereq = BIOL 210, and conreg / prereq in CHEM 220 or 221 or 326) An introduction to cancer biology, from microscopic to macroscopic processes. Topics include the initiation, promotion, and progression of cancer.

Course Objectives: Cancer is not just one disease; there are nearly as many different cancers as there are types of differentiated cells. How a cell (or cells) diverts toward this disease is also quite variable. Studying cancer from the molecular and cellular point of view, there are about ten or so major programs which are commonly altered. Studying cancer from its evolution within the host, we recognize that subsets of these programs are typically disrupted in a multi-stage pattern—initiation, promotion, and progression. Studying cancer from a medical point of view, how cancer interacts with the host and how it might wreak havoc on normal organ and organ system functions depends upon its assessed stage, giving rise to differential prognoses. In this course you will:

- 1) Recognize the stages of initiation, promotion, and progression in terms of carcinogenesis
- 2) Compare and contrast normal and pathogenic processes (from microscopic to macroscopic states) leading toward cancer
- 3) Appreciate the diversity of cancer by reviewing select individual cancers and recalling their causes and symptoms
- 4) Distinguish between different types of carcinogens and chemotherapeutics by their structure, function, and source
- 5) Understand how cancer is diagnosed, treated, followed, and finally recognize when and why treatment options vary

Textbooks @ Text Rental & on Canvas: I will use figures and facts from each of these sources, as well as various pertinent primary research articles. I will indicate sources and page ranges in course notes per slide or by group if repetitive. These texts are also here for you to use as potential resources for your final project. The only textbook available at text rental is the first textbook by Mendelsohn *et al*, but it is also available in a digital format. I strongly suggest you still rent this textbook for periodic suggested readings which will be posted over the term.

Mendelsohn, Gray, Howley, Israel, & Thompson. 2015. The Molecular Basis of Cancer. Ed. 4, Elsevier Inc. & Saunders, Philadelphia, PA.

Pitot HC. 2002. Fundamentals of Oncology, Ed. 4, Marcel Dekker, Inc., New York.

International Agency for Research on Cancer. 2020. World Cancer Report 2020. (BW Stewart & CP Wild) World Health Organization Press, Lyon, France.

International Agency for Research on Cancer. 2014. World Cancer Report 2014. (BW Stewart & CP Wild) World Health Organization Press, Lyon, France.

Course Requirements and Grading:

Point Distribution:

Graded Item	Points
Discussions & Assignments	40
Exam 1	50
2	50
3	30
Project (<i>broken up over the term</i>)	30
Total	200pts

Letter Grades (rounded at the hundredths):

---	A = 100-96%	A- = 95.9-92%
B+ = 91.9-88%	B = 87.9-84%	B- = 83.9-80%
C+ = 79.9-76%	C = 75.9-72%	C- = 71.9-68%
D+ = 67.9-64%	D = 63.9-60%	F ≤ 59.9%

Assignments & Discussions: Assignments will be distributed in each unit (roughly 2 per unit). They will be designed to check how well you are piecing together the content provided in the Kaltura Capture lecture videos. You will also be asked to post questions on discussion threads to see which topics remain unclear, or post replies to questions which I pose under a particular thread.

Exams: Exams will test your ability to recall specific facts, vocabulary terms, evaluate the importance/severity of different factors within a list, propose appropriate experiments to further evaluate a set of observations, reconstruct normal vs. pathological pathways, discuss the etiology of specific cancers discussed, etceteras. There will be a range of question types and difficulty per question for each exam. Since the topics covered over the semester are not equally dense, their point values are adjusted accordingly.

HonorLock: You will be using an online exam proctoring service called HonorLock for these exams. Please see the module “HonorLock–Student Information” for details. You will be required to take a non-content-based practice quiz to check that you can properly use this service. If you prefer not to have HonorLock’s associated software on your personal device, remember that you can arrange to take exams on a campus computer, or you may be able to rent devices if still available. This option will likely require booking spaces in the library ahead of time, contacting IT services for device availability, etc.

Project: You will be assigned a set of ~8 questions to tackle as an overall project pertaining to either a particular: **A)** cancer type, **B)** cancer treatment, **C)** carcinogen, or (rarely) another pre-approved topic. You will also be disseminating this information into a brochure. The purpose of the brochure is for you to communicate to a broad audience what you have judged to be the most interesting and important facts amassed on this topic. You need not include answers to all of the questions within the brochure, but it should be informative and creative. You will need to submit a rough draft and complete peer evaluations on the reports partway into the semester to verify that adequate progress is being made (see below). It will also serve as an opportunity to gain new ideas from your peers and learn about valuable resources others may have found, which can be shared. Finally, the brochures will be distributed on Canvas to serve as information which will be tested on exam 3 (in addition to unit 3 lecture content).

Course Outline:

What is Cancer Biology? *A Research-Sided Short Overview*

What Goes Wrong? *Normal vs. Pathological*

- How Does Cancer Develop?
stages of carcinogenesis and the cancer wheel
- Growth Pathways:
hitting the accelerator
- Checkpoints, Checkpoints, Checkpoints!
cutting the brake lines
- Growing Pains:
overcoming constrictions imposed by excessive growth
- Running From the Law!
escaping immune surveillance

Study Guide Review

What Tips the Scales? *Etiology*

- Assessing Risks:
how to identify what causes cancer
- Common Carcinogens:
from subatomic particles to organic compounds
- Environmental Contributions:
work, diet, lifestyle, and location
- Parasites and Viruses:
the unintended carcinogens
- What’s in the Genes?
the genetics of the cancer wheel...and more viruses!

Study Guide Review

What is Oncology? *Medical Point-of-View*

- How do we Detect Cancer?
from imaging to screening
- Regression, Remission, and Recurrence:
hoping for the best, preparing for the worst
- How do we Treat Cancer?
non-specific, targeted, and/or combination therapies
the future of cancer research & treatment
- How do we Prevent Cancer?
an end of term culmination

Study Guide Review

Select Graded Items’, ~Spacing:

Meet-&-Greet Discussion ; HonorLock Check

Project: Topic Selections (*requires approval*)

Assignment / Discussion

Assignment / Discussion

Exam #1

Assignment / Discussion

Project: Rough Drafts Due

Assignment / Discussion

Project: Peer Reviews Due

Exam #2

Project: Brochure Check-In (*one-on-one meetings*)

Assignment / Discussion

Project: Final Reports & Brochures Due

Assignment / Discussion

Exam #3

~Late Policy:

Some assignments will require posting a question on a discussion thread. Others may involve content only pertinent to a particular topic. Therefore, late work may only be permitted up to a point, often not surpassing the associated unit exam date, and will incur a reduction in score. I am not setting a firm policy at this time, as the degree of reduction or even the ability to still hand in a particular assignment will be context dependent. Nevertheless, I do understand that current circumstances are quite unusual, and I am willing to consider extensions if deemed appropriate. So, if you encounter an issue meeting a particular deadline, contact me. If you have other exams or major projects scheduled for other classes set for the same deadlines in this class and need to discuss flexible options, you must also contact me. Not all requests for extensions will be honored, particularly if requests become excessive/repetitive.

Accommodations:

In compliance with the Americans with Disabilities Act (ADA), I will make every effort to honor requests for reasonable accommodations made by individuals with disabilities. If you have a disability and require accommodations, please register with the Disability and Assistive Technology Center (6th floor of Albertson Hall) and *let me know as soon as possible*. Requests for accommodations, including university-sanctioned extra-curricular event conflicts, can be responded to most effectively if I receive the requests early. Examples of accommodations include extended exam durations, scheduling an alternate test site with proctor for quieter test-taking, use of ear plugs, etceteras. Such requests are confidential. More information about the ADA at UWSP can be found under this subsection of the human resources webpage at <https://www.uwsp.edu/hr/Pages/Affirmative%20Action/ADA.aspx>.

UWSP Community Bill of Rights and Responsibilities:

UWSP values a safe, honest, respectful, and inviting learning environment. A set of expectations for students and instructors, known as Student Rights and Responsibilities, is intended to help establish a positive living and learning environment. For more information go to the webpage for the Dean of Students, which outlines expectations for a respectful learning environment, as well as an overview on school policies regarding academic misconduct. The minimum penalty for violating this policy is a recorded zero for the assignment in question. The Dean of Students webpage is found at: <https://www.uwsp.edu/dos/Pages/default.aspx>.