

Cancer Biology 3 credits
Spring 2024 BIOL 566

Instructor: Dr. Yuliya Dobrydneva

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Office hours : TBA by appointment only

Only the first lecture meets in person Tuesday Jan 16th at 7:20 pm in Colgan #304-B. The rest of the lectures are on zoom on Bb at 7.30 Tuesday.

Bulletin description:

Review of modern concepts in cancer biology including taxonomy of human tumors, common cancer syndromes, and genome instability. Genetic and molecular studies of tumor cell proliferation, migration, invasion, and death.

Course objectives:

This course in cancer genomics will review the modern concepts in cancer biology. We will discuss histological and molecular taxonomy of human tumors, and common syndromes associated with increased probability of tumor development. We will highlight genomic instability as a central player that is important for cancer initiation, progression and response to chemotherapeutic agents. A systematic review of molecular pathways involved in cancer development will be presented in the course. This will involve a detailed study of molecular consequences of oncogene activation and tumor suppressor gene inactivation. We will untangle the molecular network underlying cell death and cell proliferation in cancer, as well as tumor cell invasion, migration and induction of angiogenesis. Also, we will review examples of therapeutic agents that specifically "target" tumor cells in order to prevent, diagnose, treat, and provide follow-up surveillance of cancer.

Pre-requisite: B.S. degree completed or enrollment in accelerated Master's program. At least one Cell or Molecular Biology undergraduate course.

Text: *The Biology of Cancer* by Robert A. Weinberg, Garland Science, any edition. This text is recommended, but not mandatory.

Recommended also:

Hanahan D, Weinberg R. The Hallmarks of Cancer. <https://doi.org/10.1016/j.cell.2011.02.013>

Please stay tuned for additional reading as it will be posted on Bb into weekly session folders pertaining to each week/topic. Announcements with updates will be posted regularly!

Course organization:

- Where to find course materials: Content of your weekly works, including lectures, quizzes and other assignments will be posted on Bb under a tab "**weekly session**". Each week has its own folder (week 1, week 2 etc.). Everything you need to do for a particular week is in weekly folder. When you need to use discussion boards, Bb will direct you there.
- All exams and quizzes are administered via Bb.
- All exams and quizzes are open book, open notes, open everything and untimed.
- The final exam will be given according to the university schedule.

- **Important: Exams are not repeatable. When you sign up for this class, you are committing to take the exams in the allotted time**
- Final exam will be administered during the finals week (TBA)

Important: All course communications will be conducted via Bb announcements. Please be sure that your mailbox is enabled to receive email messages from Bb. Please refer to a computer center for help! Please check Bb announcements regularly, at least twice a week.

Course evaluation and Grading:

Assessments, all weighted evenly: include quizzes, discussions, essays, presentations etc.	30%
Exam I	15%
Exam II	15%
Exam III	15%
Final Exam (cumulative)	25%

Grading: Students will receive a letter grade based on a 100-pointscale. An A+ is not awarded as a final grade.

No extra credit is allowed in this course!

Absolutely no do-overs!

Letter grades for the course will be assigned as follows:

Grades Scored Between	Will Equal
92 % and 100 %	A
90 % and Less Than 92%	A-
87 % and Less Than 90%	B+
84 % and Less Than 87%	B
77 % and Less Than 84%	B-
60 % and Less Than 77%	C
0 % and Less Than 60%	F

Grades will not be rounded up. Therefore, if you receive a grade of 89.99, your grade will be B+, not an A-

Expectations:

- Let Dr. Dobrydneva know of your needs and constraints as early as possible **prior** to the assignment due dates.
- Notify Dr. Dobrydneva during the first week of the semester regarding course schedule conflicts due to military obligations and/or religious observances.
- **Any notifications beyond the first week of classes or after the exam/quiz due date has passed may not be approved and a grade of zero will be entered.**

LATE POLICY: PLEASE READ CAREFULLY!

- Students should make every effort to submit/complete assignments on time.

- *Any assignment that is not turned in on time, without prior arrangements with the instructor, will result in a zero grade for this assignment*
- Please let me know as soon as possible if you need an extension! Any arrangements to extend a deadline for an assignment must be made prior to the deadline.
- No extension will be granted after the deadline.
- Each student is allowed maximum of two (2) extensions per semester. Other requests may not be granted and grade of zero will be entered
- Any assignment/assessment that has not been completed by the end of the semester will receive a grade of zero.

Required Equipment –Since this is an online course and all assessments are complete through the computer, you need to have a computer with a reliable internet connection. **Please be sure that you have reliable access to Bb and are proficient in its operations.**

Please be sure that you are able to receive course notifications and announcements via gmu email.

Technology Requirements: *It is a student's responsibility to ensure access to a reliable internet for quizzes, exams and lectures.*

Hardware: You will need access to a Windows or Macintosh computer with at least 2GB of RAM and access to a fast and reliable broadband internet connection (e.g., cable, DSL). A larger screen is recommended for better visibility of course material. You will need speakers or headphones to hear recorded content and a headset with a microphone is recommended for the best experience. For the amount of Hard Disk Space required, when taking a distance education course, consider and allow for:

1. the storage amount needed to install any additional software and
2. space to store work that you will do for the course.

If you consider the purchase of a new computer, please go to [Patriot Tech](#) to see recommendations.

Software: Many courses use Blackboard as the learning management system (LMS). You will need a browser and operating system that are listed compatible or certified with the Blackboard version available on the [myMason Portal](#). See [supported browsers and operating systems](#). Login to [myMason](#) to access your registered courses. Some courses may use other learning management systems. Check the syllabus or contact the instructor for details. Online courses typically use [Acrobat Reader](#), [Flash](#), [Java](#), and [Windows Media Player](#), [QuickTime](#) and/or [Real Media Player](#). Your computer should be capable of running current versions of those applications. Also, make sure your computer is protected from viruses by downloading the latest version of Symantec Endpoint/Anti-Virus software for free [here](#).

Students owning Macs or Linux should be aware that some courses may use software that only runs on Windows. You can set up a mac computer with Boot Camp or virtualization software so Windows will also run on it. Watch [this video](#) about using Windows on a Mac. Computers running Linux can also be configured with virtualization software or configured to dual boot with Windows.

Note: If you are using an employer-provided computer or corporate office for class attendance, please verify with your systems administrators that you will be able to install the necessary applications and that system or corporate firewalls do not block access to any sites or media types.

GMU Add/Drop Policy: As per GMU academic calendar.

RESOURCES

1. OFFICE OF DISABILITY SERVICES --- If you are a student with a disability and need academic accommodations, please see me and contact the Office of Disability Services (ODS) at (703) 993-2474. All academic accommodations must be arranged through the ODS. Refer to <http://ods.gmu.edu>
2. WRITING CENTER --- A114 Robinson Hall; (703) 993-1200; <http://writingcenter.gmu.edu>
3. UNIVERSITY LIBRARIES --- "Ask a Librarian"; <http://library.gmu.edu/mudge/IM/IMRef.html>
4. COUNSELING AND PSYCHOLOGICAL SERVICES (CAPS) --- (703) 993-2380; <http://caps.gmu.edu>
5. UNIVERSITY POLICIES --- The University Catalog, <http://catalog.gmu.edu>, is the central resource for university policies affecting student, faculty, and staff conduct in university affairs.

Honor Code, Copyright, & Computing Policies: *To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University community and with the desire for greater academic and personal achievement, we, the student members of the university community, have set forth this honor code: **Student members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work.***

Academic Integrity: Students are prohibited from distributing assignments, answers, quiz and exam questions on any medium to anyone. Media includes but is not limited to: texting, social media, websites, in writing, via video or photograph, or in any other way.

You are expected to adhere to all University policies and guidelines during your participation in this course. All work must be your own.

Inappropriate use of the work of others is a George Mason University Honor Code violation. Please review the University's website for information on the following: Honor Code and Judicial Procedures; Copyright/Fair Use; and Responsible Use of Computing.

If you are a student with a disability and you need academic accommodations, please contact the Disability Resource Center (DRC) at 703.993.2474. All academic accommodations must be arranged through that office. Students must inform the instructor at the beginning of the semester, and the specific accommodation will be arranged through the Disability Resource Center.

Writing Center: Students who are in need of intensive help with grammar, structure or mechanics in their writing should make use of the services of the Writing Center, located in Robinson A116 (703-993-1200). The services of the Writing Center are available by appointment, online and, occasionally, on a walk-in basis.

University Libraries "Ask a Librarian" <http://library.gmu.edu/mudge/IM/IMRef.html>

Biol 566 Spring 2024 weekly Schedule**Note: schedule is subject to change! Check your Bb messages at least twice a week!**

Week	Start Date	Assignment
Week 1	January 16	Lecture 1: General overview of cancer. Chemotherapy. Weekly quiz Assignments
Week 2	January 22	Lecture 2 Clonal Selection and metastasis Weekly quiz Assignments
Week 3	January 29	Lecture 3 Carcinogenesis Weekly quiz Assignments
Week 4	February 5	Exam 1
Week 5	February 12	Lecture 4 Cancer immunology Weekly quiz Assignments
Week 6	February 19	Lecture 5 Hormones Weekly quiz Assignments
Week 7	February 27	Exam 2
Week 8	March 11	Lecture 6 Multiple myeloma Weekly quiz Assignments
Week 9	March 18	Lecture 7 DNA repair Weekly quiz Assignments
Week 10	March 25	Exam 3
Week 11	April 1	Lecture 8 Kinase inhibitors Weekly quiz Assignments
Week 12	April 8	Lecture 9 mTOR inhibitors Weekly quiz Assignments
Week 13	April 15	Lecture 10 Telomers. Warburg effect Weekly quiz Assignments
Week 14	April 22	Lecture 11 Cancer grand challenges Weekly quiz Assignments
Finals week	May 1 – May 8	Final Exam 4 (TBA)