

FALL 2025
BIOLOGY 426 (UNDERGRADUATE) MECHANISMS OF AGING (3 CREDITS)

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Bulletin description:

A course where students will demonstrate knowledge of cellular and molecular mechanisms which drive the systematic changes that result in aging, and to understand the overall biological processes involved in complex biological systems.

Course Prerequisites:

- Students are expected to be familiar with the basic concepts of natural sciences such as biology, chemistry, and physics on a conceptual level.
- BIOLOGY 213 completed, or co-enrolled within the same semester, or permission of instructor

When: FRIDAY, 10:30 AM - 1:10 PM, ONLINE BY ZOOM VIA CANVAS

Course organization:

Where to find course materials on Canvas:

Content of all your weekly work, including lectures, quizzes and other assignments will be posted on Canvas under an appropriate **MODULE**. Each week has its own module (week 1, week 2 etc).

Zoom link for the class can be found in Canvas

- **Important: All course communications will be conducted via Canvas announcements.**
- **Be sure that your mailbox is enabled to receive email messages from Canvas.** Enable Canvas announcements to Every day and **do not disable** them!
- Check Canvas announcements daily! **Failure to receive and to react to an announcement is to an excuse for missing work, and your grade will reflect that.** Please refer to a computer center for help if you need help with setting up notifications/announcements!
- All exams, assessments and quizzes are administered via Canvas only! Please be sure that you are proficient in basic functionality of Canvas
- Quizzes on Canvas are usually available from **8 am Monday through EOD Thursday**.
- All exams and quizzes are open book, open notes, open everything and untimed.
- **Presentation is a part of the group topic and graded on a graduate rubric. You will select/assign your topic and the paper. You will receive detailed instructions about creating your presentation and answering presentation**

questions. Please be sure you follow the **GRADUATE PRESENTATION GUIDELINES** and **GRADUATE RUBRIC**.

- **Important:** Presentation must be given in class via zoom and on the day you signed up to give it. There are no substitutions such as a pre-recorded presentation, presentation on a different day, “make-up day”. The day you sign up is the day you are presenting.
- **Not presenting on chosen day and time will result in a grade of zero for a presentation. There will be no partial credit if the presentation is not presented.**
- **Presentation quizzes are based on the material in papers and a follow-up discussion so missing a presentation creates a hardship for an entire class.**
- **Important:** Exams are not repeatable. When you sign up for this class, you are committing to the time frame for exams.
- **Absolutely no do-overs! THERE ARE ABSOLUTELY NO MAKE-UP EXAMS**
- The final exam will be given according to the university schedule during the finals week and will be held in the same format as regular exams (TBA)

Course 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!**
 - Letter grades for the course will be assigned based on the schema below
- Midterm exam- 20%**
Project Presentation - 30%
Quizzes, discussions, one-time assignments, all weighted equally 25%
Final exam (cumulative) - 25%

Grading schema

A >94

A- > 90

B+ > 87

B >84

B- > 80

C > 61

F < 61

Grades will not be rounded up. Therefore, if you receive a grade of 79.99, your grade will be C, not a B-.

Graduate students are not given grades D, D-, C+ or C-.

Course policies:

LATE POLICY: PLEASE READ CAREFULLY!

- Students should make every effort to submit/complete assignments on time.
- **Late penalty is assigned 10 pts for each day the assignment is late.**
- **Any assignment that is not turned in on time, without prior arrangements with the instructor, will result in a zero grade for this assignment**

- **Any arrangements to extend the 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.**

Expectations:

- Let Dr. Dobryднева or Dr. Baranova know **in writing** of your needs and constraints as early as possible **prior** to the assignment due dates.
- Notify Dr. Dobryднева 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.**
- Various participation activities will be posted throughout the semester. Students are expected to **demonstrate critical and creative thinking** mainly through discussion boards and paper presentations. It is important that students participate in all assignments as defined by the course schedule to demonstrate knowledge comprehension. Expectations of graduate students reflect their advanced standing and knowledge as future leaders of biomedical and health sciences.
- All questions or discussion points must be completely answered. Grades are based on your thoughtful response. Entries must clearly reflect the requirements of the assignment.
- All written work must be word processed with acceptable grammar and sentence structure and submitted in Word or pdf format by the assigned due date.
- Stay tuned for the specific guidance for the course assignments as they come up.

Reference Sources:

Literature readings will be assigned from journals such as: *Mechanisms of Ageing and Development*, *Experimental Gerontology*, *Science and Nature*. There is no text for the course. Biochemical and cellular background knowledge needed to understand processes described in the assigned readings may be obtained from texts like: *Berg, Tymoczko and Stryer's, Biochemistry*; *Darnell, Lodish and Baltimore's; Molecular Cell Biology*, and Bioinformatics texts like; *Bioinformatics: Sequence and Genome Analysis*, by David W. Mount. Web based resources will be made available as appropriate via the course site.

Course schedule Biology of Aging Spring 2026

Note: schedule is subject to change. Check your announcements daily!

Week	Activity
Week 1 January 23	Course overview and syllabus. Bb discussion. No lecture, no new material.
Week 2 January 30	Lecture 1. Aging overview. Weekly quiz
Week 3 February 6	Lecture 2. Theories of Aging. Weekly quiz
Week 4 February 13	Lecture 3. ROS Weekly quiz
Week 5 February 20	Lecture 4. Endocrine system Weekly quiz.
Week 6 February 27	Lecture 5. Homeostasis Weekly quiz
Week 7 March 6	Mid-term exam
Week 8 March 20	Class presentations (1). Antagonistic pleiotropy. Quiz
Week 9 March 27	Class presentations (2). Senescence. Quiz
Week 10 April 3	Class presentations (3). Aging models. Quiz
Week 11 April 10	Class presentations (4). Brain Aging. Quiz
Week 12 April 17	Class presentations (5). Menopause. Quiz
Week 13 April 24	Class presentation (6). Aging interventions. Quiz
Finals week May 6 – May 13	Final exam (TBA)

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 Canvas and are proficient in its operations.**

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

Email requirements:

1. Mason requires that Mason email be used for all courses.
2. You may forward your Mason email to other accounts but always use your Mason e-mail when communicating with me to allow verification of your identity.
3. You are required to check your Mason email account regularly and to keep your mailbox maintained so that messages are not rejected for being over quota.

Plagiarism:

Plagiarism is the presentation of someone else's ideas or work as one's own. Students must give credit for any information that is not either the result of original research or common knowledge. If a student borrows ideas or information from another author, he/she must acknowledge the author in the body of the text and on the reference page. Students found plagiarizing are subject to the penalties outlined in the Policies and Procedures section of the University Catalog, which include a hearing by the Honor Code Committee and may include a failing grade for the work in question or for the entire course. The following website provides helpful information concerning plagiarism for both students and faculty: <http://oai.gmu.edu/honor-code/>

Honor Code:

George Mason University has an Honor Code, which requires all members of this community to maintain the highest standards of academic honesty and integrity. Cheating, plagiarism, lying, and stealing are all prohibited

- ☐ All violations of the Honor Code will be reported to the Honor Committee. See
- ☐ <http://oai.gmu.edu/honor-code/> for more detailed information.

Enrollment:

- ☐ Students are responsible for verifying their enrollment in this class.
- ☐ Schedule adjustments should be made by the deadline published on the Registrar's website. Note the add/drop dates in the Academic Calendar published on the Registrar's website.
- ☐ After the last day to drop a class, withdrawing from this class requires the approval of the dean and is only allowed for nonacademic reasons.
- ☐ Undergraduate students may choose to exercise a selective withdrawal. See <http://registrar.gmu.edu> for selective withdrawal procedures.
- ☐

Ethics:

Ethical behavior in the classroom is required of every student. The course will identify ethical policies and practices relevant to course topics.

Students are expected to be competent in using current technology appropriate for this discipline. Such technology may include presentation software. Students are required to become familiar with Mason's Responsible Use of Computing Policy #1301 http://copyright.gmu.edu/?page_id=301

Civility:

As a diverse community of learners, students must strive to work together in a setting of civility, tolerance, and respect for each other and for the instructor. Rules of classroom behavior (which apply to online as well as onsite courses) include but are not limited to the following:

- Conflicting opinions among members of a class are to be respected and responded to in a professional manner.
- Side conversations or other distracting behaviors including cell phone use or non-class online access are not to be engaged in during lectures, class discussions or presentations
- There are to be no offensive comments, language or gestures

Students not complying will be asked to cease immediately or leave the class session.

Netiquette For Online Discussions [1]: Our discussion should be collaborative, not combative; you are creating a learning environment, sharing information and learning from one another. Respectful communication is important to your success in this course and as a professional. Please re-read your responses carefully before you post them so others will not take them out of context or as personal attacks. Be positive to others and diplomatic with your words and I will try my best to do the same. Be careful when using sarcasm and humor. Without face-to-face communications your joke may be viewed as criticism. Experience shows that even an innocent remark in the online environment can be easily misconstrued.

[1] Netiquette prepared by Charlene Douglas, Associate Professor, College of Health & Human Services, GMU.

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>
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.