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# Biology 310

**Aging and Age-related Disease**

**Spring Semester 2019**

Tuesday, 1:10-4pm

215 Kunkel Hall

Dr. Elaine Reynolds, instructor

108 Kunkel Hall

610-330-5654

reynolde@lafayette.edu (best way to reach me)

My office hours are **W 11-1 pm** in 108 Kunkel. Please feel free to email or call me to set up a time that is convenient for you.

We will also be using a Moodle site in this course. You can find this site at <http://moodle.lafayette.edu>. We will discuss use of this tool during the first class session.

Moodle privacy statement:

Moodle contains student information that is protected by the Family Educational Right to Privacy Act (FERPA).  Disclosure to unauthorized parties violates federal privacy laws. Courses using Moodle will make student information visible to other students in this class. Please remember that this information is protected by these federal privacy laws and must not be shared with anyone outside the class. Questions can be referred to the Registrar’s Office.

# Course description and objectives

Most of the study in the field of developmental biology concentrates on the development of form and structure during embryonic stages. But after birth, organisms continue to grow, mature, and eventually die. The body and brain undergoes many developmental modifications over the course of an adult lifetime and many of the diseases occur later in that lifespan. In this course, we will explore the normal aging process as defined by changes in the cellular physiology, and physiology of the body and brain, and age-associated changes in behavior. We will also look at diseases associated with the aging process. The basis for our learning will be discussions of the current literature, field experiences with aging populations, and writing assignments that assess and develop integration and critical analysis. Each student will develop an area of expertise, which they will share with the class. The course will include written criticisms of the literature, including a final paper that reviews the literature in the student’s chosen area of expertise and reflects on the integration of the literature with the student’s field experience. This fieldwork will take place through training and service opportunities at local facilities and we will specifically discuss the place of such service in our learning. Students will be expected to be active participants in their own learning and through integration of the cumulative backgrounds of the participants; we will seek a greater understanding of the current state of knowledge in this field. Rather than a passive experience such as a lecture, this seminar-style course is designed to be an intensive, active learning experience with a dynamic flow of information between the students in the class.

**Student Learning Outcomes**

Students at the end of the course will be able to:

* demonstrate a new base of knowledge about aging that integrates evidence over different levels of biology complexity, and across disciplines.
* appraise the role of evolutionary processes in aging
* communicate scientific ideas verbally
* critically read, analyze and integrate different types of scientific literature (W1)
* identify and employ a range of strategies for discovering information, and for developing,  organizing, revising, and editing writing (W2).
* understand and practice the conventions of scientific writing (W3)
* appropriately integrate experiences with academic and other types of knowledge to understand the role of civic engagement within the sciences

**Course Mechanics**

**Readings.** Readings will be assigned for most class sessions and will be posted in advanced on the course website on Moodle. One book for the class is recommended. We will be using the book for several class sections. I believe you will find this book useful to own for this class and in the future.

## *Writing in the Biological Sciences* by Angelika H. Hofmann. 2013. ISBN: 9780190245603 paperback 2nd edition Oxford University Press.

**Discussion sessions.** The class will meet for one three-hour period a week. It is crucial that you be prepared for class. You will have readings and assignments for the first week. We will be reading and evaluating science journalism, review articles and the primary literature. After fieldwork begins, we will also be discussing these experiences during class. For discussion sessions, you will be required to read and understand the readings assigned and to come to class prepared. Everyone is expected to participate in discussion and a portion of your evaluation will depend on your participation and contribution to discussion. Sometimes you may be required to post to forums on the Moodle discussion board. You are required to post your comments by 10:00 am the day of class. These posts will in part be used to assess your participation in discussion.

**Attendance.** Please be on time for discussion sessions. Attendance at the discussion session is mandatory since this is a seminar course. If you miss a discussion session because of a reasonable conflict (I am the sole arbiter of what is reasonable), you must make arrangements in advance with me. If you miss a discussion session because of sickness or other emergency, please notify me as soon as possible. In most cases, a Dean’s excuse will be required if a class is missed without prior arrangement because of sickness or any other conflict.  **More than one unexcused absence will result in a one-letter grade deduction for the discussion grade, more than two will result in a failing grade for the discussion grade.**

**Cell phone/computer policy.** Turn all cell phones and electronic devices while we are conducting discussions in class. Please make notes or print out papers we are discussing. You may bring your devices and use them in some segments of the class where directed.

**Fieldwork.** It is one thing to read about the molecular, physiological and cognitive details of the aging or disease and quite another to experience the effects of those processes through experiential learning. Through fieldwork with aging populations, we will integrate personal experience with our readings. Using these experiences, we will discuss the application of our knowledge, the societal impact of basic science, and the contribution of service to personal growth and to society. This work will involve service at local facilities: Third Street Alliance, Easton Senior Center, Gracedale and The Village on College Hill. Third Street Alliance and the Village are within walking distance of the college and the Easton Senior Center is a 5 min ride by car or van (next to Metzgar Field). Gracedale is about 15 min. You will be required to volunteer for a minimum of **15 hours** spread throughout the semester. Early in the semester, the class will discuss our responsibilities as volunteers and also receive some orientation on what to expect from the clients. We will also set up times with the facility contact person for the service to take place. Please remember that the clients you encounter in these settings have a right to privacy and so you should not be discussing specific details of your experience outside of the classroom. In conjunction with the fieldwork, you will be writing about your experiences and in response to prompts. You will receive a detailed handout outlining the requirements for this assignment.

**Written Assignments.**  This is a writing course and so most assignments during the semester will require you to turn in written materials. We will discuss use of library resources and computer resources during the first week and throughout the semester. These writing assignments are described below and more detailed handouts of the assignments will be given to you as they are scheduled in the syllabus. We also have a WA for the course and you will be working with her to complete these assignments. Writing assignments are due the days indicated on the syllabus unless I indicate to you in writing a new due date. Writing assignments that are late will receive a reduced grade for each day beyond the due date.

Most of the writing assignments are part of a semester long project where you will develop expertise in a field related to aging. There may be a few Moodle based writing assignments that will count towards your overall participation grade.

Web assignments

Web assignment #1 An assignment to familiarize you with web-based library

search, library use and other web based tools. You will be asked to follow a series of directions to help you select papers using different library or web-based tools

Web assignment #2 This assignment will help you review and select papers in your

area of expertise and will be a source of papers for the review, and

a midterm assignment.

Web assignment #3 An assignment to refine a set of papers to use in your review

We will discuss these assignments in class and you will receive feedback from me on the progress of your literature search

Critique Writing Assignment. You will be asked to summarize and critically evaluate one of the papers from your web assignment list #2. You will receive feedback, do a rewrite working with the WA before turning in for a grade. The writing from this assignment will be integrated into your final project

Paper summaries. You will be asked to summarize the papers you select for your review in your own words as part of a drafting process for the paper

## Literature Review and Reflection You will write a literature review and reflection on your course experience at the end of the semester in your chosen area of expertise. This paper will require you to summarize and integrate information from the research references gathered via web assignments #2 and 3 and your course experiences. References for the paper will be submitted and agreed upon about the middle of the semester and any deviation from the agreed upon reference list will result in a severe reduction in grade. We will be discussing project ideas in class near the beginning of the semester and you will be required to present informal updates about your review towards the end of the semester. A draft of the review will be submitted for feedback from me (see dates below) before the final paper is due. A handout will detail the requirements for this assignment.

**WA visits.**We will be working with a writing associate this semester, Ashley Carey (carya@lafayette.edu). You will be required to meet with her during the semester. She will contact you with potential meeting times. She will meet with you to go over the following assignments:

 Work through literature searches/selecting articles for web assignment #3 and outlining

 your paper

 Go over a draft of your Critique assignment

 Help with paper summaries of your review papers (if you need help)

 Help with a draft for the Review assignment.

Failure to attend an agreed upon session with Ashley will result in a 5% grade reduction on the assignment associated with the meeting.

**Academic Honesty.** I expect that you will perform this work independently and honestly as laid out in the student handbook and biology departmental statement on academic honesty (included in this syllabus). The handbook states:

To maintain the scholarly standards of the College and, equally important, the personal ethical standards of our students, it is essential that written assignments be a student’s own work, just as is expected in examinations and class participation. A student who commits academic dishonesty is subject to a range of penalties, including suspension or expulsion. Finally, the underlying principle is one of intellectual honesty. If a person is to have self-respect and the respect of others, all work must be his/her own.

**Evaluation and Grading Policy.** As indicated above you will be evaluated on your contributions to discussion/posting, your field work writing, and written assignments. The determination of your grade will fall roughly along the percentages indicated below. I hope this will provide you with a feel for the relative importance of course components.

Discussion/Attendance/Posts participation overall 20%

Critique 20%

Web assignments 20% total

Field experience writings 5%

Literature Review

 Summaries 5%

Draft 5%

 Final paper 25%

**Diversity, Inclusion and Equity Statement**

In this class we will respect and appreciate the background and perspective of every student regardless of their race, ethnicity, gender, social class, sexual orientation, religion, political affiliation, ability, and learning style. I am committed to providing an atmosphere for learning that respects diversity and inclusion, as well as promotes equality by removing educational barriers in our classroom. Please feel free to engage with me on how we might create an inclusive classroom together.

In compliance with Lafayette College policy and equal access laws, I am available to discuss appropriate academic accommodations that you may require as a student. Requests for academic accommodations need to be made during the first two weeks of the semester, except for unusual circumstances, so arrangements can be made. Students must register with the Office of the Dean of the College for verification and for determination of reasonable academic accommodations.

**Compliance statement.**  The student work in this course is in full compliance with the federal definition of a four credit hour course. Please see the Registrar’s Office web site ([https://registrar.lafayette.edu/wp-content/uploads/sites/193/2013/04/Federal-Credit-Hour-Policy-Web-Statement.doc](https://registrar.lafayette.edu/wp-content/uploads/sites/193/2013/04/Federal-Credit-Hour-Policy-Web-Statement.doc%22%20%5Ct%20%22_blank)) for the full policy and practice statement.

**Bio 310 Schedule**

This schedule is flexible but gives a general progression for the course. The readings for each class are available on Moodle

Week date Discussion Topics

1 1/29 Class introduction/Aging and Mortality

Discussion about Fieldwork/Library and Computer Tools

**Web assignment #1 handout**

2 2/5 Longevity

 healthspan vs. lifespan, centurians

Fieldwork discussion

### Web assignment #1 due

3 2/12 Aging theories

metabolic control, epigenetics, stem cells

**Web assignment #2 handoutand discussion**

Writing in the discipline-style

4 2/19 Aging theories II

 mutations, inflammation, evolution

 Writing in the discipline-citation

5 2/26 Aging and Caloric Restriction

 in models and in humans

**Web assignment #2 due, Web assignment #3 handout**

Reflection on literature search & web #2

Fieldwork Check in

6 3/5 Diet Impacts on Aging

 protein vs carbs, polyphenols

**WA appointments for web #3**

**Critique handout** discussion

Critical analysis of the primary literature

7 3/12 Aging Therapies

Exercise, drugs, stem cells

Peer group assignments

**Web assignment #3 due before spring break**

8 3/19 **Spring Break**

9 3/26 Alzheimer’s disease

 Causes and diagnosis

**Literature Review and summaries handout**

**WA appointments for critique**

**Critique Due by Monday at noon 4/1**

10 4/2 Alzheimer’s disease

 Interventions

Writing summaries

11 4/9 Sociological Aspects of Aging

Fieldwork discussion

12 4/16 Peer group work and One-on-One appointments

**Paper summaries due-bring to class**

13 4/23 Literature review summary presentations

**WA appointment for Literature review draft**

14 4/30 Literature review summary presentations

**WA appointment for Literature review draft**

 **Review Draft due Friday 5/3 by noon**

15 5/7 Semester Review

**Final draft of the Literature Review** is due during finals week



**Biology Department Statement on Academic Honesty and Plagiarism**

 We expect our students to conduct themselves with honor and integrity at all times. This includes, but is not limited to, respecting your instructors and fellow students in your comportment and behavior, as well as respecting their intellectual accomplishments and contributions to your own academic work. We define academic dishonesty as any act or intention to deceive any member of the Department as to the source of your ideas when submitting any work for a grade. During tests or exams this includes failure to abide by any test-taking condition (written, audiovisual or verbal) established by the course instructor. Unless explicitly stated otherwise, it will be understood that the use of “crib sheets”, copying from other students, and any use of notes, books, electronic aids or other reference materials is prohibited while taking any quiz or test in any Department course. The Lafayette Student Handbook offers a more detailed discussion of academic honesty, including the procedures followed in cases of academic dishonesty and the possible penalties arising from it.

 Our insistence on academic honesty extends from traditional writing (including laboratory reports) through artwork, electronic projects, or oral presentations, which you submit for a grade. Students are cautioned to be particularly vigilant against plagiarism, which is a frequent form of academic dishonesty. The Lafayette Student Handbook includes an extensive section on plagiarism and we encourage you to become familiar with this material. Among the most common, but no less serious, forms of plagiarism is re-writing someone else’s work without crediting the original author. Rewording a passage from another source and failing to cite that source is a form of plagiarism and will be treated as a breach of academic honesty. In crediting the work of others, all sources are treated as equal: you must cite material produced by other students, material found in the primary or secondary literature, course handouts, and any material obtained from the Internet. Individual instructors may establish more comprehensive guidelines within their respective courses; you are responsible for knowing and understanding any such rules for courses in which you are enrolled.

 If you have any questions about what constitutes academic dishonesty in general or in a specific situation, it is your responsibility to discuss the matter with your instructor.

 Issued by the Biology Department, January 2011