

Moravian College
Department of Biology
Senior Seminar (BIO 370) – Biology of Aging
Fall 2006

Instructors:	Dr. Cecilia M. Fox* Dr. Diane Husic (first half of the semester)
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Office:	Collier Science - Room 304 (Dr. Fox) Collier Science – Room 311B (Dr. Husic)
Office Hours:	Monday 12-2pm, Tuesday 10am-1pm <i>and by appointment</i> (Dr. Fox)
Class Meeting Times:	M,W,F 10:20-11:10am – Room TBA
Prerequisites:	Senior status or permission of instructor
Required Textbook:	McMillan VE. 2006. <u>Writing Papers in the Biological Sciences</u> . 4 th Edition. Boston: Bedford/St. Martin's. 269p.
Additional Required Reading:	<i>You will also have several readings from journals, media, and internet sources throughout the semester.</i>

*Dr. Fox will be on maternity leave for the first half of the semester.

Course Introduction and Description:

The aging process is one that affects all humans. No one is immune. However, just as we associate negative characteristics to aging (such as tired, forgetful, sick, wrinkled, etc) there are healthy models of aging (energetic, fit, alert, youthful, etc). As curious individuals, we are aware of the nuances of our anatomy and physiology. As we age, we tend to pay more attention to our bodies when abnormalities in function develop within critical organ systems.

The importance of understanding the biological mechanisms underlying the aging process has increased due to the rapid growth of individuals aged 65 and over. Much time and effort is spent trying to find the elusive “fountain of youth”. Yet, as we progress through this course, consideration should be given to the concept that “aging” is a normal process. It does not necessarily contribute to physiological dysfunction. Genetics, diet, environmental conditions, social interactions are just as likely to contribute to physiological dysfunction as aging.

Furthermore, during this course, the study of aging will not only focus on humans, but *biological models* of aging. Our lifespan is too long to make it practical to study only human subjects. Model systems in yeast, *Drosophila* and *C. elegans* have provided much to our understanding of the biological basis of aging. Aging is a complex process involving many subtle cellular changes. We will critically examine and discuss biological mechanisms involving mitochondrial defects and oxidative stress, DNA mutations and repair, telomeres and cellular senescence as well as evolutionary processes which may all play some role in this natural progression through time. This course

fulfills the writing intensive requirement for the Biology major and serves as the capstone experience for all Biology senior students.

Course Objectives: Upon completion of this course the students will be able to:

- 1) thoroughly research a specific topic in the biological basis of aging using primary and secondary literature sources
- 2) concisely express a research topic in abstract form
- 3) construct successful outlines and drafts of written work from peer and professor feedback
- 4) complete a research paper with appropriate scientific citations
- 5) effectively discuss primary literature through journal club sessions
- 6) present their comprehensive research before peers and instructor using Power Point software as well as address questions regarding their work
- 7) objectively critique peer abstract writing samples and ask questions during discussions and after student presentations.

Grading: The grading system is as follows: (+/- will be administered as professor deems appropriate)

A = 90 - 100

B = 80 - 89

C = 70 - 79

D = 60 - 69

Course Requirements: The student's grade will be based on the following:

Abstract writing exercise	100 points
Draft of research paper due 2 weeks prior to presentation	50 points
One written research paper	100 points
One abstract	100 points
Abstract and primary article in library <u>on time</u> with a copy delivered to the instructor <i>(All or nothing grade)</i>	50 points
One research presentation and follow up question-answer session	200 points
Resume exercise	100 points
Class participation	100 points
Attendance	<u>100 points</u>
	900 points

** The "class participation grade" is based on your participation and preparation for each class session.

Therefore, excessive absences could have a negative effect on your final grade for the course.

** Please note : it is within the instructor's purview to apply qualitative judgment in determining grades for an assignment or the entire course

Expectations:

- a) Attendance: Regular class attendance is expected. **No** make-up presentations will be permitted unless you have an acceptable reason (family emergency, illness, etc). If an emergency should arise, you must notify the instructor prior to the presentation date and **not** after. Notification from the Moravian College Health Center, Learning Services or the Moravian College Dean of Students' Office will be necessary if you miss more than two seminar classes. If a make-up date is to be scheduled, it will occur

during the exam period of final exam week. We will recognize legitimate excused absences such as when students are representing the university in an official capacity (e.g. for presentation at scientific meetings, intercollegiate athletic competition, but not practice, off-campus music performances, etc.). Such activities are scheduled ahead of time; thus, we expect you to make arrangements with us ahead of time as well. Please note: Students who arrive late to class disrupt the flow of the session and distract their peers. Please be prompt!

- b) Cheating or plagiarism will not be tolerated. Plagiarism may result in failure of the course. Students will be held to the highest standards as specified by the Moravian College Honor Code. Violations of this code will be handled in the most severe manner allowed by college policy. Please read the Academic Honesty Policy that is included in the student handbook *and* the policy that will be distributed in class. We have attached a cover sheet to our policy that each of you will sign indicating that you have read and understand the policy and implications of violating it. If you have any questions about plagiarism or other forms of academic dishonesty, please ask. Several assignments in this class will involve the use of internet resources, and it is our experience that students often do not realize that copyright violations and plagiarism policies still apply.
- c) Appropriate Literature Sources: Dr. Husic will conduct a “Reference Tutorial” during the first week of class. All students will be required to understand the differences between primary and secondary literature sources. Dr. Husic will also provide examples of appropriate Internet sources. Under no circumstances are you to use “Wikipedia” as a reference for any assignment.
- d) Reading Assignments : should be completed prior to each class session
- e) Writing Assignments : A rough draft of your final research paper is due to the instructor **two weeks** prior to your presentation date. Ten points will be deducted from your grade for every day it is late. It will be evaluated and returned to you within one week. An abstract of your presentation as well as your primary article are to be placed on reserve in the library **one week** prior to your presentation date. You will need to drop off a copy of your abstract and primary article to the instructor’s office that same day to receive full credit. A final draft of your research paper (6-8 pages) is due to the instructor on the day you are scheduled to present your research topic. If it is not submitted on that day, 20 points will be deducted from the “research paper” grade for every day it is late. You are each responsible for knowing the timeline for your assignments.
- f) Extra Help : If any difficulties arise during this course from selecting a research topic to designing your presentation, please see the instructor. *I will be happy to help!* The reference librarians in Reeves Library are also willing to assist you with reference materials. Please contact the Moravian College Writing Center for further assistance in writing and revising your abstracts and research papers

Best wishes for a great semester!

- C. Fox and D. Husic

Class Schedule

<u>Date</u>	<u>Topic</u>	<u>Reading Assignment</u>
Aug. 28	Introduction and Expectations	
	Selection of Presentation Dates	
Aug. 30	Reference Tutorial	Chapter 1
	*with Dr. Husic in Room TBA	
Sept. 1	Introduction to the "Biology of Aging"	
	Open discussion: perceptions, misconceptions	
Sept. 4	No class - Labor Day	
Sept. 6	Writing a Research Paper vs. a Review Paper	Chapter 4, 5
Sept. 8, 11	Abstract Writing Exercise	
Sept. 13	Journal Club Discussion	TBA
Sept. 15	Preparing a Draft	Chapter 7
Sept. 18	"Aging in the News"	
Sept. 20	Preparing a Final Draft	Chapter 8
Sept. 22	Power Point Tutorial	Chapter 10 (p215-226)
	*with Dr. Husic in Room TBA	
Sept. 25-27	Sample Power Point Slideshow by Students	
Sept. 29	Journal Club Discussion	
	Topic and Outline of Paper Due to Dr. Husic by 5:00pm	
Oct. 2	Presentation 1	
Oct. 4	Presentation 2	
Oct. 6	"Aging in the News"	
Oct. 7-10	Fall Recess	
Oct. 11	Presentation 3	
Oct. 13	Presentation 4	
Oct. 16	Ethics in Aging Research	
Oct. 18	Presentation 5	
Oct. 20	Presentation 6	
Oct. 23	Journal Club Discussion	
Oct. 25	Presentation 7	
Oct. 27	"Aging in the News"	
Oct. 30	Presentation 8	
Nov. 1	Presentation 9	
Nov. 3	Healthy Models of Aging	
Nov. 6	Presentation 10	
Nov. 8	Presentation 11	
Nov. 10	Journal Club Discussion	
Nov. 13	Presentation 12	
Nov. 15	Aging Myths - Part 1	
Nov. 17	Presentation 13	
Nov. 20	Presentation 14	
Nov. 22-26	Thanksgiving Holiday	
Nov. 27	Aging Myths- Part 2	
Nov. 29	Presentation 15	
Dec. 1	"Aging in the News"	

Dec. 4	Presentation 16
Dec. 6	The Aging Brain
Dec. 8	Resume Day!
Dec. 11	Course Debriefing
Dec. 13-19	Final Exam Period: Potential Make-Up Session

Timeline and Important Suggestions for Writing Your Research Papers

Timeline:

- Topic and outline due to Dr. Husic on September 29th by 5:00pm
- Rough draft of paper due two weeks prior to presentation date
- Abstract and primary article due to professor and placed on reserve in Reeves Library by 5:00pm one week prior to presentation date
- Final draft of paper due on day of presentation!

Suggestions:

- Your research paper and presentation are to be a **review** of several research projects reported by various scientists on your topic in the field of aging – do not give a summary of only one research paper.
- You are expected to cite a minimum of three primary scientific papers and two secondary references.
- You are to attach copies of all primary literature sources to your rough draft of paper.
- Your primary article should not be from work published prior to 1995.
- Any figures or images should be attached at the end of the 6-8 page paper (as an appendix) – do not place in body of paper.
- Please visit the Writing Center if you are having difficulties in composing your final draft.

Grading Criteria for Research Paper:

Clarity of writing

Quality of writing (grammar, punctuation, etc)

Ability to summarize research information

Appropriate detail

Correct interpretation of data

Correct use of key terms

Appropriate References