Physiology of Aging Syllabus, Fall 2021

Robin Looft-Wilson, Ph.D.
rlooft@wm.edu, 221-2784, 113 Adair Hall, Office Hours: Tue 3:30-4:30, Fri 1:00-2:00

Prerequisites: This course requires a basic knowledge of cell biology.

Textbook: None

Goals: To build your basic knowledge of the physiological processes associated with aging including common pathologies. To develop your ability to analyze and present scientific research papers in aging.

Grading:

Research Paper Discussions	100 pts.	Weekly (10 total, 10 pts. each)
Test #1	40 pts.	Sept. 15
Test #2	40 pts.	Oct. 13
Test #3	40 pts.	Nov. 5
Final Exam (Comprehensive)	40 pts.	Nov. 24, 2:00-5:00 (tentative)
TOTAL	260 pts.	

Tests:

Tests will be multiple-choice. However, there is the opportunity to explain any answers you choose. If a wrong answer is chosen, a logical, valid explanation can sometimes lead to partial or even full credit. If the correct answer is chosen, there will be no deductions for invalid explanations.

If an alternate date is needed for tests due to scheduling conflicts, an earlier test date will be allowed if arranged at least one week prior with the professor. If a later date is needed due to illness or personal crisis (contact the Dean of Students), the test can be taken within one week after the test without penalty. Without an excuse, a late test will be allowed, but **5% will be deducted if taken within one week, and 10% will be deducted is taken later than one week after the test date**.

Alternate dates for the final exam are allowed but **require approval from the Dean of Students**.

Preparation for tests: Test questions typically require that you not only master the terminology and sequence of events in a physiological process, but also be able to apply the knowledge to new situations. Study questions will be provided before each test. It is highly recommended that you read the Blackboard notes for each lecture **before** attending the lecture.

Paper Discussions:

Paper discussions will consist of reading an assigned original research paper, and then writing a brief 1-page summary of the paper (**5 points, due by 10:00 AM the day of the discussion; late summaries will lose 1 point**), and discussing the paper in class (**5 points**).

The written summary should include, ***in your own words***, the purpose/hypothesis of the paper, a description of the key figures/tables including **what the data shows** and **what it means**, and overall

conclusions/significance of the paper. You can write it in paragraph or outline/bullet-point form. **Submit your summaries on Blackboard by the deadline**.

Your small group will be assigned a figure or table to present, and you will have time in class to discuss the figure/table and organize your presentation within your small group before presenting to the class. Your group should present: 1) overall purpose of the figure, 2) each panel of the figure include what the axes mean and what the figure shows, 3) overall conclusion of the figure, 4) any limitations or problems with the methodology used or conclusions made by the authors.

Questions regarding the papers will appear on tests, so attendance and participation in important.

Missed Discussions: If you are going to miss a paper discussion, you may turn in a more detailed written summary (~4 pages) instead, which will be **due by 5:00 on the day of the discussion**, or points will be deducted (5% if turned in within 1 week, 10% after 1 week). Be advised that it is difficult to earn full credit with this written option. **You will only be able to take this option for 2 paper discussions**.

Final grading:

Final grading is based on the standard scale cut-points (e.g., A=93%, A-=90%, B+=87%, B=93%, B-=80%, etc.), however, if the mean is <80%, then grading is on the curve, with the mean representing the lowest B. Grades are generally not rounded up unless the score is within 0.5 points of the next grade bracket. *There is no opportunity for extra credit assignments in this course.*

Topics:

I. Introduction to Aging and Human Longevity
   A. What is Aging & How is it Studied
   B. History of Human Life Span
   C. Diseases of Aging
II. Theories of Life Span and Aging
   A. Comparative Approaches, Physiological Correlates, Genetic Models
   B. Cellular Senescence and Death
   C. Oxidants and Antioxidants in Aging
   D. Caloric Restriction and the Insulin/IGF-1 Pathway
   E. Genes Associated with Longevity
III. Systemic Alterations with Aging
   A. Nervous System
   B. Sensory Systems
   C. Endocrine System
   D. Cardiovascular System
   E. Respiratory System
   F. Renal System
   G. Urinary and Reproductive Systems
   H. Musculo-Skeletal System; Skin
IV. Strategies for Healthful Aging

Schedule:

Thurs., Sept. 2	Lecture #1: Introduction to Aging/Longevity
Tues., Sept. 7	Lecture #2: Theories of Life Span and Aging (Genetic Models, Telomeres)
Thurs., Sept. 9	Paper #1
Tues., Sept. 14	Lecture #3: Theories of Aging (Oxidative Stress)
Thurs., Sept. 16	Paper #2
Tues., Sept. 21	Lecture #4: Hallmarks of Aging, Caloric Restriction, Strategies to Slow Aging
Thurs., Sept. 23	Paper #3
Tues., Sept. 28	**TEST #1**
Thurs., Sept. 30	Lecture #5: Nervous System (Structural Changes, Memory, Dementia)
Tues., Oct. 5	Paper #4
Thurs., Oct. 7	Lecture #6: Nervous System (Alzheimer's, Motor Control, Parkinson's)
Tues. Oct. 12	Paper #5
Thurs., Oct. 14	Lecture #7: Nervous System (Sleep, Vision, Hearing)
Tues., Oct. 19	**FALL BREAK**
Thurs., Oct. 21	Lecture #8: Endocrine System (Stress)
Tues., Oct. 26	Paper #6
Thurs., Oct. 28	**TEST #2**
Tues., Nov. 1	Lecture #9: Endocrine System (Metabolism), Cardiovascular System
Thurs., Nov. 3	Paper #7
Tues., Nov. 9	Lecture #10: Atherosclerosis, Respiratory and Renal Systems
Thurs., Nov. 11	Paper #8
Tues., Nov. 16	Lecture #11: Urinary and Reproductive Systems, Bones/Joints
Thurs., Nov. 18	Paper #9
Tues., Nov. 23	Video: The 90+ Study
Tues., Nov. 30	Lecture #12: Muscle, Skin
Thurs., Dec. 2	**TEST #3**
Tues., Dec. 7	Paper #10
Thurs., Dec. 9	Lecture #13: Strategies for Healthful Aging

FINAL EXAM **Mon., Dec. 20, 2:00-5:00 (tentative)**

Accommodations: It is the policy of William & Mary to accommodate students with disabilities and qualifying diagnosed conditions in accordance with federal and state laws. Any student who feels s/he may need an accommodation based on the impact of a learning, psychiatric, physical, or chronic health diagnosis should contact Student Accessibility Services staff at 757-221-2512 or at sas@wm.edu to determine if accommodations are warranted and to obtain an official letter of accommodation. For more information, please visit www.wm.edu/sas. Department Diversity Plan: https://www.wm.edu/as/kinesiology/diversity-plan/index.php.