Welcome to
BIOL 310: Animal Physiology
Course Information and Syllabus
UAF - Spring 2019
4 Credits

Meets
Lecture MWF 8:00 – 9:00am Murie Auditorium
Labs: M 2:15 - 5:15pm (F01) Murie 309
T 2:00 - 5:00pm (F02)

Professor Cory Williams
Email: ctwilliams@alaska.edu
Phone: (907) 474-5965
Office hours: MW 9 - 10 or by appointment in Murie 323C

Teaching Assistant Benjamin Meyer
Email: bemeyer@alaska.edu
Office Hours: TBD

Prerequisites Biol 115X & 116X (Fundamentals of Biology), Chem 105X & 106X (General Chemistry)

http://www.sinauer.com/animal-physiology.html
Looseleaf (3 hole punched format): ISBN:978-1-60535-594-8

Website The course website is administered through Blackboard at http://classes.alaska.edu. Check the website for announcements and to obtain copies of handouts and assignments. Grades will be posted on Blackboard.

Description Animal function, including respiration, digestion, circulation, nerve and muscle function, hormones, and reproduction. This course addresses how animals function in different environments, using examples from vertebrates (including humans) and some invertebrates. Through completion of this course, you will have a larger understanding of the physiological processes that allow animals to function and survive in varied environments. This course meets the Biology and Wildlife department requirements that you demonstrate broad knowledge of organismal structure and function, evolution, biologically relevant pathways and transformations of energy and matter.
Goals

Students should expect to complete this class with a working grasp of animal physiology and some of the methods used to study it. It is intended to complement Biol 317 (Comparative Anatomy of the Vertebrates), and serves as a prerequisite for Neurobiology, Developmental Biology, Physical Ecology of Overwintering, Animal Behavior, Vertebrate Endocrinology, and Reproductive Biology. It should serve as good preparation both for students interested in health-related careers as well as students interested in graduate work in biology or wildlife related fields.

Instructional Methods

This course draws upon lecture, literature, simulation, and laboratory exercises to teach physiological principles and their application. Some in-class and laboratory group exercises will encourage problem solving and independent thinking. Lectures will be interactive and therefore attendance is mandatory – failure to attend lectures will impact your grade (see below). Several lab sessions will be devoted to discussions of primary literature and will include peer-to-peer learning.

Assessment

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Points</th>
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<tbody>
<tr>
<td>Lecture Quizzes</td>
<td>100 pts</td>
</tr>
<tr>
<td>One minute writes</td>
<td>50 pts</td>
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<tr>
<td>Exam #1</td>
<td>200 pts</td>
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<tr>
<td>Exam #2</td>
<td>200 pts</td>
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<tr>
<td>Final</td>
<td>200 pts</td>
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<tr>
<td>Lab</td>
<td>250 pts</td>
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<tr>
<td>Total</td>
<td>1000 pts</td>
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Grading

Grades will be assigned based on the percentage of points earned in class. Grades will not be assigned on a curve. No extra credit assignments are available.

<table>
<thead>
<tr>
<th>Grade</th>
<th>% of Total Points</th>
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<tbody>
<tr>
<td>A+</td>
<td>95 – 100</td>
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<tr>
<td>A</td>
<td>90 – 94</td>
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<tr>
<td>A-</td>
<td>86 – 89</td>
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<tr>
<td>B+</td>
<td>82 – 85</td>
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<tr>
<td>B</td>
<td>77 – 81</td>
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<tr>
<td>B-</td>
<td>73 – 76</td>
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<tr>
<td>C+</td>
<td>69 – 72</td>
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<td>C</td>
<td>64 – 68</td>
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<tr>
<td>C-</td>
<td>60 – 63</td>
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<td>D</td>
<td>50 – 59</td>
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<td>F</td>
<td>0 – 49</td>
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Lectures

Class attendance is required for lectures. Lectures will provide material beyond what is covered in the textbook and will require in class participation. The lecture hour also provides an opportunity for announcements about upcoming labs.

Missing Lectures

During the course of the semester, there will be 13 lecture quizzes – only the top 10 (of 13) quiz scores a student receives will count towards their quiz grade. Make-up quizzes will only be available if a student can document legitimate reasons for missing more than 3 quizzes. Additionally, over the course of the semester, there will be 15 one-minute writes (OMW). These OMW are short, written responses to questions during lectures that will help you see what elements of the lecture I am trying to emphasize and will provide me with feedback on your understanding of course content. Each OMW completed will provide the student with 5 points (up to a maximum of 50 points). No make-ups will be provided for OMW unless documentation of legitimate reasons for missing more than five OMW is provided.

Missing Exams

You must notify the instructor as soon as possible if you anticipate a conflict with an exam. If you are going to miss an exam due to illness, you must contact the instructor by email or phone before the exam begins (if at all possible) and provide documentation of a legitimate excuse (e.g., a note from a medical professional). Notification does not entitle the student to a make-up exam or a change in exam time, but does allow the instructor to consider a request for alternative arrangements.

Labs

The labs are designed to introduce you to a variety of physiological systems. Labs will also be a place to practice science by creating your own questions and procedures to answer those questions. Laboratory assessments include quizzes, question sets, laboratory assignments/reports, and participation in discussions. Points for participation in discussion sessions are based on the quality (not just quantity) of the discussion points you raise.

Missing Labs

Any planned absences must be coordinated with your TA prior to the start of lab. If you are unable to attend lab due to unforeseen reasons you must contact your TA immediately. Notification does not entitle the student to a make-up lab or a change in lab time, but does allow the TA to consider alternative arrangements.
Academic Dishonesty: Acts of academic dishonesty include cheating on exams, helping others to cheat, plagiarizing, feigning illness to obtain an extension, and turning in work that was written for another class without permission. Please read the UAF Code of Conduct in the UAF Catalog. Acts of academic dishonesty can result in the student receiving an F for the class and the case will be reported to the Dean of Student's Office for review. You are encouraged to work in groups on lab exercises, but unless otherwise specified, each of you must turn in your own written assignment.

Disabilities: Any student eligible for and needing reasonable accommodations due to a disability is requested to speak with me during the first two weeks of classes. Please contact UAF Disability Services (Phone: 474-5655, TTY x1827; email: uaf-disabilityservices@alaska.edu,) to provide documentation of your disability and to arrange for support services.

Student Protections & Services: Every qualified student is welcome in my classroom. As needed, I am happy to work with you, disability services, veterans' services, rural student services, etc to find reasonable accommodations. Students at this university are protected against sexual harassment and discrimination (Title IX), and minors have additional protections. As required, if I notice or am informed of certain types of misconduct, then I am required to report it to the appropriate authorities. For more information on your rights as a student and the resources available to you to resolve problems, please go the following site: www.uaf.edu/handbook/

The lecture and Lab schedule outlined below is tentative and may change:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Chapter/Pages</th>
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<tbody>
<tr>
<td>1</td>
<td>Jan 14 Welcome &amp; Introduction</td>
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<tr>
<td></td>
<td>Jan 16 Intro to Physiol: Homeostasis &amp; Membranes</td>
<td>Ch 1</td>
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<td></td>
<td>Jan 18 Energy &amp; Metabolism</td>
<td>Ch 7</td>
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<td></td>
<td><strong>Jan 14/15 Lab Introduction</strong></td>
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<td>2</td>
<td>Jan 21 No Class – Alaska Civil Rights Day</td>
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<td></td>
<td>Jan 23 Cellular Metabolism</td>
<td>Ch 7-8</td>
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<tr>
<td></td>
<td>Jan 25 Cellular Metabolism</td>
<td>Ch 8</td>
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<td><strong>Jan 21/22 No Labs – AK Civil Rights Day</strong></td>
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<td>3</td>
<td>Jan 28 Daily Energy Expenditure</td>
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<td></td>
<td>Jan 30 Thermal Physiology</td>
<td>Ch 9-10</td>
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<td>Feb 1 Thermal Physiology</td>
<td>Ch 9-10</td>
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<tr>
<td>4</td>
<td>Feb 4 Thermal Physiology</td>
<td>Ch 9-10</td>
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<td></td>
<td>Feb 6 Gas Exchange</td>
<td>Ch 22-23</td>
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<td></td>
<td>Feb 8 Gas Exchange</td>
<td>Ch 23</td>
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<td></td>
<td><strong>Feb 4/5 Lab 2: LT – Intro to Lab Tutor</strong></td>
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<td>Week</td>
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<td>Schedule</td>
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<td>5</td>
<td>Feb 11</td>
<td>TBD</td>
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<td></td>
<td>Feb 13</td>
<td>Guest Lecture</td>
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<td></td>
<td>Feb 15</td>
<td>Exam I</td>
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<td><strong>Feb 11/12</strong></td>
<td><strong>Lab 3: LT – Breathing/Respiration</strong></td>
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<td>6</td>
<td>Feb 18</td>
<td>Transport O2 &amp; CO2</td>
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<td></td>
<td>Feb 20</td>
<td>Transport O2 &amp; CO2</td>
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<td></td>
<td>Feb 22</td>
<td>Circulation &amp; Heart</td>
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<tr>
<td><strong>Feb 18/19</strong></td>
<td><strong>Lab 4: LT – Cardiac Function (ECG)</strong></td>
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<td>7</td>
<td>Feb 25</td>
<td>Circulation &amp; Heart</td>
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<td></td>
<td>Feb 26</td>
<td>Dive Response</td>
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<td></td>
<td>Mar 1</td>
<td>Dive Response</td>
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<tr>
<td><strong>Feb 25/26</strong></td>
<td><strong>Lab 5: LT – Dive Response</strong></td>
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<td>8</td>
<td>Mar 4</td>
<td>Nutrition – Macro &amp; Micronutrients</td>
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<td></td>
<td>Mar 6</td>
<td>Nutrition</td>
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<td></td>
<td>Mar 8</td>
<td>Feeding &amp; Digestion</td>
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<tr>
<td><strong>Mar 4/5</strong></td>
<td><strong>Lab 6: LT – Blood Pressure</strong></td>
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<td><strong>March 11-15 Spring Break 2018</strong></td>
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<td>9</td>
<td>Mar 18</td>
<td>Nutrition, Feeding, &amp; Digestion</td>
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<td>Mar 20</td>
<td>Water and Salt Physiology</td>
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<td>Mar 22</td>
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<td><strong>Mar 18/19</strong></td>
<td><strong>Lab 7: LT – TBD</strong></td>
<td>Halsey et al. 2009</td>
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<td>10</td>
<td>Mar 25</td>
<td>Exam II</td>
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<td>Mar 27</td>
<td>Water and Salt Physiology</td>
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<td>Mar 29</td>
<td>Action Potentials &amp; Neurons</td>
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<td><strong>Mar 25/26</strong></td>
<td><strong>Lab 8: LT – Skeletal Muscle</strong></td>
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<tr>
<td>11</td>
<td>Apr 1</td>
<td>Neurophysiology</td>
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<td>Apr 3</td>
<td>Muscle Physiology</td>
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<td></td>
<td>Apr 5</td>
<td>Muscle Physiology</td>
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<td><strong>April 1/2</strong></td>
<td><strong>Lab 9a: Group Paper Presentations</strong></td>
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<td>12</td>
<td>Apr 8</td>
<td>Muscle Physiology</td>
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<td>Apr 10</td>
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<td><strong>Apr 8/9</strong></td>
<td><strong>Lab 9b: Group Paper Presentations</strong></td>
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<tr>
<td>13</td>
<td>Apr 15</td>
<td>Timing Circadian</td>
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<td>Apr 17</td>
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<td></td>
<td>Apr 19</td>
<td>Timing Seasonal</td>
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<td><strong>Apr 15/16</strong></td>
<td><strong>Lab 10: Paper Discussion 2</strong></td>
<td>TBD</td>
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<td>14</td>
<td>Apr 22</td>
<td>Seasonal Timing &amp; Reproduction</td>
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<td>Apr 24</td>
<td>Reproduction</td>
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<td>TBD</td>
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<td><strong>Apr 22/23</strong></td>
<td><strong>Review Session</strong></td>
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<td>15</td>
<td>Apr 29</td>
<td>Q&amp;A Session</td>
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<tr>
<td><strong>May 2</strong></td>
<td><strong>8-10am Final Exam</strong></td>
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