

# Biology 316: Comparative Animal Physiology

(3 Credits)

## Fall 2017 Semester

**Lecture:** DMS 110, MW 2:30-3:45pm

**Office:** 212A Sarah Fleischmann

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**Office hours:** W 1:00-2:15pm, or by appointment

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Office hours: M 1-2pm or by appointment, Office: FA 133

Catalog Description: “Animal function from a comparative perspective with emphasis on vertebrates.”

Course Objectives – This course aims to survey animal physiology from a mechanistic, evolutionary, comparative, and environmental perspective. Therefore, emphasis will be placed on the mechanisms by which animals perform their life-sustaining functions, the evolution and adaptive significance of physiological traits, the ways in which diverse phylogenetic groups of animals resemble each other and differ, and the ways in which physiology and ecology interact in both the present and during evolutionary time. Therefore, our discussions will span both vertebrate and invertebrate models to illustrate how largely divergent evolutionary groups have evolved different mechanisms to cope with similar environmental constraints.

### Student Learning Outcomes

- Students will be able to compare physiological function across different vertebrate taxa.
- Students will learn how animals maintain homeostasis in different environments.
- Students will explain how an animal’s internal condition is regulated by control systems.
- Students will predict how different animals will respond physiologically to variation in physical environments.

Required text – *Animal Physiology* (Hill, Wyse, Anderson, 4<sup>th</sup> Edition)

Attendance - Attendance is mandatory in the two 75-min lectures each week.

**2 November 2017** is the last day for dropping the course without grade and for changing from credit to audit. No drops or changes to audit will be permitted after this date.

### Assessment of learning- Grading

**Exams** – Three lecture exams (50 pts each) will be given during the course of the semester. The exams will consist of multiple-choice and short answer questions. Exams will be based on readings from the text, journal sources, and material covered in lectures. All exam scores will contribute to the final grade.

Exam 1	10/4/17	50pts
Exam 2	10/30/17	50pts
Exam 3	11/22/17	50pts
Final Exam	12/20/17	70pts
Quizzes	See below	30pts
Total		250pts
Extra Credit		10pts

**Exam Review** – You will be able to review your exam during office hours or appointments until the following exam is given. Once the next exam is given, you may no longer review a previous exam because it will be archived.

**Exam Make-Up Policy** - Exams must be taken at the scheduled times unless a student has a [justifiable excuse](#) and receives approval in advance from Dr. Ouyang. If a student misses an exam due to an emergency and provides verifiable documentation, the student may request to take a makeup exam. Make-up examinations will be considered on a case-by-case basis. Make-up work of any kind is at the discretion of the professor, per university policy, and may be refused by the professor. Dr. Ouyang will never allow more than one make-up examination for a given student regardless of the circumstances.

**Quizzes** – Three Web Quizzes will be administered through WebCampus/Canvas. Each quiz will be worth 10 points. Quizzes will open one week prior to each lecture exam and remain open for one week. Quizzes must be completed prior to the closing of the one-week quiz period, and quizzes will not be re-opened after the closing date.

**Extra credit** – Extra credit is given through participation in class quizzes and discussion questions. We will be using the platform TopHat (join code: 479473). Students who participate in >70% of the daily questions will receive 10 pts extra credit. Extra credit for midterm and final course evaluations available.

**Grades** – Whole letter grades, A – F will be assigned. The grading scale is as follows: A ( $\geq 89.5\%$ ), B (89.4-79.5%), C (79.4-69.5%), D (69.4-59.5%), F ( $\leq 59.4$ ).

Final value will be rounded to the nearest tenth of a percentage (e.g. 69.49% = D, 69.50% = C), there will be no exceptions. Plus/minus grades will not be assigned for any reason.

**Email** is an acceptable method to contact your instructor with questions. Dr. Ouyang will respond to emails within 48 hours, not including weekends. Sending of an email does not automatically give you permission to miss an exam. Please be courteous in your email with advanced proofing and include your name. Consider your email to be a formal piece of writing.

Academic Dishonesty Statement - Cases of academic dishonesty are viewed as a serious violation for the student code of conduct. Examples of academic dishonesty include, but are not limited to:

- Copying homework assignments.
- Cheating on quizzes or exams including sharing answers with students in other sections of the course.
- Including information in written assignments without proper citations.
- Any use of a cellular phone for any reason during an exam will result in immediate failure of the course.

**Any occurrence of academic dishonesty will result in a student receiving an F for the course.** See the “Student Conduct Information” section of the UNR General Catalog for specific University policies and procedures regarding academic dishonesty.

Statement on Audio and Video Recording - “Surreptitious or covert video-taping of class or unauthorized audio recording of class is prohibited by law and by Board of Regents policy. This class may be videotaped or audio recorded only with the written permission of the instructor. In order to accommodate students with disabilities, some students may be given permission to record class lectures and discussions. Therefore, students should understand that their comments during class may be recorded.”

Disability statement- Any student with a disability needing academic adjustments or accommodations is requested to contact both the instructor and the Disability Resource Center (Thompson Building - 107), as soon as possible to arrange for appropriate accommodations.

<b>Date</b>	<b>Lecture topic</b>	<b>Readings</b>
8/28/17	Intro & molecules and cells	Ch. 1 & 2
8/30/17	-omics and development, epigenetics	Ch. 3 & 4
9/4/17	<b>(Labor day-no classes)</b>	
9/6/17	Development, epigenetics continued	Ch. 4
9/11/17	Transport of solutes and water	Ch. 5
9/13/17	Nutrition and feeding	Ch. 6
9/18/17	Metabolism	Ch. 7 & 8
9/20/17	Energetics of aerobic activity	Ch. 8 & 9
9/25/17	Thermal relations	Ch. 10
9/27/17	Integration – mammals in frigid environments	Ch. 11
10/2/17	Exam I review	
10/4/17	<b>Exam I</b>	
10/9/17	Neurons & Synapses	Ch. 12 & 13
10/11/17	Sensory processes	Ch. 14
10/16/17	Biological clocks	Ch. 15
10/18/17	Endocrine systems	Ch. 16
10/23/17	Reproduction	Ch. 17
10/25/17	Integration- migration	Ch. 18
10/30/17	<b>Exam II</b>	
11/1/17	Movement, muscle, muscle plasticity	Ch. 19, 20, 21
11/6/17	O <sub>2</sub> and CO <sub>2</sub>	Ch. 22
11/8/17	Respiration	Ch. 23
11/13/17	Transport	Ch. 24
11/15/17	Circulation	Ch. 25
11/20/17	Integration - diving	Ch. 26
11/22/17	<b>Exam III</b>	
11/27/17	Water and salt	Ch. 27
11/29/17	Water and salt II	Ch. 28
12/4/17	Excretion	Ch. 29
12/6/17	Integration – dry environments	Ch. 30

12/11/17	Review session	
12/13/17	No class-prep day	
12/20/17	<b>Final Exam 12:10-2:10pm</b>	

\*Please note that the schedule is subject to change and is not a finalized list of topics.