

Fall 2015

BIOS 5353

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Comparative Animal Physiology (BIOS 5353)

Fall 2015

Instructor: Simon Lailvaux (slailvau@uno.edu)

Office hours: Tuesday/Wednesday/Thursday 12:00-2:00pm or by appointment, BIO 120A

Class times: Tuesday/Thursday 2:00-3:15pm BIO 101

Prerequisite: C or better in BIOS 3354 (Vertebrate Physiology)

Internet: Readings and course material will be posted on the class webpage

(<http://www.fs.uno.edu/slailvau/Physiology.html>)

Student learning outcomes: By the end of this course, students will have a broad understanding of the animal physiology as it relates to phylogeny and ecology, and will be able to read, understand, and discuss scientific papers on physiological topics. Graduate students specifically have the additional learning objectives of choosing and critiquing appropriate papers from the scientific literature, and of preparing and leading class discussion on a relevant topic.

Textbook: There is no assigned text for this course. Readings will come from chapters/excerpts of various texts that I will supply you with, and from the primary literature.

Grading: Grades will be based on written papers, reports and participation in discussion. All assignments will count towards the final grade, i.e. no grades will be dropped. Letter grades will tentatively be assigned on a 10% point scale. Students will be required to produce a **physiological critique of a popular “monster” movie or TV show involving animal function** (~5 pages; see below); and a long paper (~ 10 pages) dealing with **any topic in comparative physiology covered in the course** (subject to approval by the instructor).

Graduate students: In addition to the above assignments, graduate students will also be required to produce a short **written critique of a published paper of their choice on physiology or physiological ecology** (approximately 1 page). The student will then pick one of the 5 available discussion sessions to **lead and moderate class discussion on that paper**. The written critique will be due on the day of that discussion (whichever it is). Students will be graded equally on the quality of their critique and on their performance as discussion moderator. All other requirements are the same as those for undergraduates.

Academic integrity: Academic integrity is fundamental to the process of learning and evaluating academic performance. Academic dishonesty will not be tolerated. Academic dishonesty includes, but is not limited to, the following: cheating, plagiarism, tampering with academic records and examinations, falsifying identity, and being an accessory to acts of academic dishonesty. Refer to the Student Code of Conduct for further information. The Code is available online at <http://www.studentaffairs.uno.edu>.

Disability access: It is the University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities should

contact the Office of Disability Services as well as their instructors to discuss their individual needs for accommodations. For more information, please go to <http://www.ods.uno.edu>.

Attendance: Attendance in lectures is expected and attendance during discussions is **mandatory** (participation in discussions will contribute to the student’s final grade; see “Grading” above).

Important dates: The last date to drop the course and not have a grade assigned is **September 8**. The final date to drop a course and receive the grade of “W” is **October 14**.

Popular monster movies: There are a number of (mostly terrible) movies with “monsters” as either protagonists or antagonists. These monsters are usually, but not always, some type of animal that is unknown to science, perhaps because it was created deliberately/accidentally as such, has always existed without us knowing of it, or is extra-terrestrial in nature. Regardless of their origin, all animals existing on Earth are bound by physical laws which dictate what they can and cannot do, which means that they must all obey the physiological principles we are examining in this course. Students will be required to choose a monster movie and critically evaluate the monster’s biology compared to the known physiology and biology of actual living animals. Variables of interest include (but are not limited to): size, diet, energetic expenditure, locomotor ability, thermal biology, respiratory capacity, phyletic classification (e.g. vertebrate or arthropod, reptile or mammal), reproductive physiology, etc. For some of these variables, “scientific” explanations (the veracity of which you would do well to be suspicious of and should also evaluate) may be given in the movie itself; others may need to be inferred or speculated upon. Critiques must in all cases be based on verified scientific evidence and include references to the actual scientific literature. Choice of movie is subject to instructor approval.

Schedule of topics (tentative and subject to sudden, violent change)

Week	Tuesday	Thursday
Aug 20		Adaptation
August 25, 27	Metabolism I	Metabolism II
Sept 1,3	Diet and Energetics I	Diet and Energetics II
Sept 8, 10	Discussion	Growth and Populations
Sept 15, 17	Dietary restriction and longevity	Costs of transport
Sept 22, 24	Discussion	Limits to distributions
Sept 29, October 1	Thermal ecology	Evolution of endothermy

Oct 6, 8	Dinosaurs	Discussion
Oct 13, 20	Performance mechanics	Exercise physiology I
Oct 27, 29	Exercise physiology II	Performance genomics
Nov 10, 12	Physiology of aging	Discussion
Nov 17, 19	Topic talk	Topic talk
Nov 24	Final Discussion	

Important dates

Date	Assignment
Oct 20	Movie review due
Oct 30	Paper topic selected
Dec 8	Final paper due