

# BIOL 322

## Environmental Physiology of Animals

Winter Term (2013-14)

### CALENDAR DESCRIPTION

A comparative examination of interaction between animals and their environment including: physiological adaptations to extreme environments (e.g., arctic, desert); responses to acute and chronic environmental stress (e.g., hypoxia, temperature); environmental regulation of normal physiological processes; uses of comparative models in other fields.

PREREQUISITE BIOL 339/3.0.

### SCHEDULE

Lectures: Monday 10:30-11:30, Wednesday 9:30-10:30, Friday 8:30-9:30. BIOSC 1102.

<b>Instructor</b>	Dr. Y. Wang
<b>Instructor Contact</b>	<a href="mailto:yuxiangw@queensu.ca">yuxiangw@queensu.ca</a> , Phone: 533-6134, Rm. 3508 Biosc.
<b>Office Hours</b>	TBA
<b>TA:</b>	See Course Moodle Website
<b>TA Contact Information</b>	See Course Moodle Website
<b>Office Hours</b>	TBA

### Learning Objectives

BIOL 322 is a survey of animal physiology using a comparative perspective. The emphasis is on the interaction of the animal with its environment (social and physical) rather than the mechanisms of homeostatic feedback within an individual. Examples will be drawn widely from the Animal Kingdom. This course differs from BIOL 339 that examines the functioning of major organs and tissues from a comparative perspective rather than the interactions of an organism with the environment. It also differs from human PHGY courses that are focused on function as a means of understanding and mitigating malfunction (disease) of human, rather than physiological functions as an array of evolutionary adaptation to an ecological niche. The BIOL 322 emphasis on the environment leads us to consider the impacts of environmental disturbances, including contaminants, on the welfare of wild animals. The course assumes a basic understanding of biological diversity (BIOL 200) and animal physiology (BIOL 339).

### Learning Hours

<i>Teaching method</i>		<i>Average hours per week</i>	<i>Number of weeks</i>	<i>Total hours</i>
In-class hours	Lecture	3	12	36
	Seminar			
	Laboratory			
	Tutorial	1	12	12
	Practicum			
	Group learning			
	Individual instruction			
Other	Online activity	2	12	24
	Off-campus activity			
	Private study	5	12	60
Total hours on task				130

### Course Outline

#### **Course Topics**

1. Introduction to environmental physiology
2. Scaling and size in physiology
3. Water and life
4. Osmotic homeostasis in various environment
5. Respiration in various environment
6. Thermal strategies in various environment
7. Locomotion in various environment
8. Metabolism in different environment

### Textbooks/Readings

The required course textbook is: Willmer, Stone & Johnston. 2005. Environmental Physiology of Animals 2nd edition, Blackwell Science. ISBN1-4051-0724-3.

A study manual will be available with a nominal fee. We will make the arrangement for you to purchase the manual.

### Grading Scheme

<b>Component</b>	<b>Weight (%)</b>	<b>Date</b>
In-class midterm exam	20%	Feb 12 <sup>th</sup> , 2014
Essay	30%	April 4 <sup>th</sup> , 2014
Final Exam	50%	TBA

### Grading Method

- In this course, some components will be graded using numerical percentage marks. Other components will receive letter grades, which for purposes of calculating your course average will be translated into numerical equivalents using the Faculty of Arts and Science Letter Grade Input Scheme.

When letter grades are employed, the following scale will be employed for purposes of calculating your course average:

***Arts & Science Letter Grade Input Scheme***

Assignment mark	Numerical value for calculation of final mark
A+	93
A	87
A-	82
B+	78
B	75
B-	72
C+	68
C	65
C-	62
D+	58
D	55
D-	52
F48 (F+)	48
F24 (F)	24
F0 (0)	0

Your course average will then be converted to a final letter grade according to Queen's Official Grade Conversion Scale:

***Queen's Official Grade Conversion Scale***

Grade	Numerical Course Average (Range)
A+	90-100
A	85-89
A-	80-84
B+	77-79
B	73-76
B-	70-72
C+	67-69
C	63-66
C-	60-62
D+	57-59
D	53-56
D-	50-52
F	49 and below

**Academic Integrity and Queen's Code of Conduct**

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments and conduct conform to the principles of academic integrity. Information is available in the Arts and Science Calendar (see Academic Regulation 1 -

<http://www.queensu.ca/artsci/academic-calendars/regulations/academic-regulations>, on the Arts and

Science website (see <http://www.queensu.ca/artsci/academics/undergraduate/academic-integrity>), and at Biology's website (<http://www.queensu.ca/biology/undergrad/integrity.html>) and from the instructor of this course. Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery and falsification, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulations on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the university.

### **Accommodation Policy, Exam Conflicts, and Other Conflicts**

Students who feel they need accommodations for disabilities or extenuating circumstances, or have a conflict between exams or other commitments should consult the Biology Department's website for details about how to proceed (<http://www.queensu.ca/biology/undergrad/integrity.html>). In general, the earlier a course coordinator is apprised of an extenuating circumstance, the more likely an accommodation can be made. Students are encouraged to be proactive in anticipating difficulties, when it is possible to do so.

Students may apply to write a make-up or deferred exam if they have an exam conflict as defined in the Academic Regulations of the Faculty (See Arts and Science Calendar Regulation 8 - <http://www.queensu.ca/artsci/academic-calendars/regulations/academic-regulations>). In this case, the student should report to the Exams Office first to verify that there is a genuine exam conflict. Biology professors will not consider your situation to be a conflict unless it meets the criteria set out by the Faculty of Arts and Sciences.

Students may request a make-up or deferred exam if they have an exam conflict with off-campus travel associated with a field course (e.g BIOL-307/3.0 or 407/3.0) that is held during the fall or winter terms.

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### **Accommodation of Disabilities**

*Queen's University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact the Disability Services Office (DSO) and register as early as possible. For more information, including important deadlines, please visit the DSO website at: <http://www.queensu.ca/hcds/ds/>*