

**Experiments in Animal Physiology**  
**BIOL 401**  
Fall Term (2013-14)

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Course Goals and Objectives

**Course Description:** Laboratory based course emphasizing experimental approaches to understanding the principles of animal physiology covered in BIOL 339/3.0.

COREQUISITE BIOL 339/3.0; EXCLUSION BIOL 338/3.0; EQUIVALENCY BIOL 340/3.0

**Course Objectives:** The goal of this course is to give students hands-on experience with many of the tools and techniques used in animal physiological research. Whether you have taken BIOL339 previously, or are taking it concurrently, the lab experience will help you understand the basic design and function of physiological systems.

**Highlights in technical training include:**

- spectrophotometric analyses of metabolites and enzymes in muscle and nerve tissues
- electrophysiological measurements of nerve electrical properties
- myograph methods to explore the control of striated and cardiac muscle
- respirometry to study the factors that influence gas exchange and metabolic rate

**Academic activities include:**

- essays on select topics, with and without peer review
- small group work with high faculty: student ratios
- workshops on challenging topics
- refreshers on statistical analyses of biological data
- preparation of scientific reports on novel data sets

Academic Integrity

Academic integrity is constituted by the five core fundamental values of honesty, trust, fairness, respect and responsibility (see <http://www.academicintegrity.org>). These values are central to the building, nurturing and sustaining of an academic community in which all members of the community will thrive. Adherence to the values expressed through academic integrity forms a foundation for the "freedom of inquiry and exchange of ideas" essential to the intellectual life of the University (see the Senate Report on Principles and Priorities <http://www.queensu.ca/secretariat/policies/senateandtrustees/principlespriorities.html>).

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments conform to the principles of academic integrity. Information on academic integrity 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), 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 regulation 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.

### Copyright of Course Materials

This material is designed for use as part of BIOL401 at Queen's University and is the property of the instructor unless otherwise stated. Third party copyrighted materials (such as book chapters and articles) have either been licensed for use in this course or fall under an exception or limitation in Canadian Copyright law.

Copying this material for distribution (e.g. uploading material to a commercial third-party website) can lead to a violation of Copyright law. Find out more about copyright here:

<http://library.queensu.ca/copyright.>

### Grading Scheme

The course is subdivided into 3 units, each spearheaded by one of the course instructors.

#### **Part 1: Metabolism**

- Quiz 1 (10%)
- Assignment 1 (30%)

#### **Part 2: Excitable Tissues**

- Assignment 2 (30%)

#### **Part 3: Respiration**

- Assignment 3 (30%)

### Grading Method

All components of this course will receive numerical percentage marks. The final grade you receive for the course will be derived by converting your numerical course average to a letter grade according to Queen's Official Grade Conversion Scale:

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

<b>Grade</b>	<b>Numerical Course Average (Range)</b>
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

### Late Policy

Students are expected to hand in material by the deadline. The expectation is that late assignments will be assigned a mark of 0. If extenuating circumstances exist, you need to discuss any accommodation with the instructor for that unit. Your TA is not able to consider your requests for accommodation.

### Accommodation Policy (Department of Biology)

Our policy for accommodations is the standard for Biology, articulated at the Biology website. Our policy for accommodations is the standard for Biology. Any requests require that you download, print, fill out, and deliver in person the [Declaration of Extenuating Circumstances Form](#) to document the circumstances and request for a dispensation. Dispensations, based on legitimate excuses **MAY** be granted at the discretion of the course coordinator. If you are not sure whether your excuse is legitimate, **ASK**.

**Scenario 1. You EXPECT TO miss an exam, presentation or assignment:** Then you need to contact the course coordinator 72h **BEFORE** the date. Depending on the situation, they may require you to submit the form prior to the date or require you to submit the form within 72h after the date.

**Scenario 2. You unexpectedly MISSED an exam, presentation or assignment:** Then you need to contact the course coordinator within 72h **AFTER** the date and submit the form.

Once you have written an exam, it counts - the Biology Department will not change your grade and your only option is an appeal to the Faculty of Arts and Science. If circumstances are personal and you wish not to relate them to the course coordinator, she or he may request documentation from a counsellor at Queen's HCDS, or other appropriate authority.

### **Supporting Documentation**

Please do not go to a physician **SOLELY** to obtain documentation of a health issue. You may be asked to provide the instructor with the appropriate supporting documentation, depending on the circumstances such as:

- Serious long-term illness or injury certified by documentation from a licensed health professional.
- Current or recent treatment from a licensed psychiatrist, or counselling by Queen's Student Services, certified by supporting documentation from same.
- Recent death or life-threatening illness or injury of a family member or close friend. The course instructor may ask for verification of the situation (e.g., death certificate, published obituary) and may verify the legitimacy of the document.
- A disability certified by documentation from the Special Needs Office.

Note that if any of this documentation is determined to be fraudulent, the Department will consider this to be a departure from **academic integrity**.

### **Exam Conflict and Holiday Travel**

There are no exams in this course. There are no exams in this course.

### Textbooks/Readings

There is no required textbook for this course, but students should make use of undergraduate textbooks in physiology and biochemistry to clarify uncertainties about the material.

### Course Outline

The specific nature of lab exercises will be provided in class. They can change at the last moment due to availability of specimens.

- **Unit 1: Metabolism** (weeks 1-4) will consist of analysis of metabolites and enzymes.
- **Unit 2: Excitable tissues** (weeks 5-8) will involve assessing the fundamental properties of muscles and nerves
- **Unit 3: Respiration** (weeks 9-12) will explore the environmental and evolutionary factors that influence metabolic rate and gas exchange.