



# ZOO\*4170 Experimental Comparative Animal Physiology

Winter 2020

Section(s): C01

Department of Integrative Biology

Credit Weight: 0.50

Version 1.00 - November 01, 2019

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## 1 Course Details

### 1.1 Calendar Description

In this course an experimental approach to the study of physiological mechanisms and adaptive responses to changes in the environment will be stressed. The focus of the course will be on laboratory exercises.

**Pre-Requisites:** 1 of BIOM\*3200, HK\*2810, ZOO\*3210, ZOO\*3600

### 1.2 Course Description

In this course an experimental approach to the study of physiological mechanisms and adaptive responses to changes in the environment will be the primary topics. The focus of the course will be on intensive laboratory exercises conducted in small groups. The Lecture portion will support the investigation into comparative animal physiology while also focusing on the development and refinement of oral presentation skills in the sciences.

### 1.3 Timetable

- Lectures: Tue/Thu 10:00 – 11:20 AM in MCKN room 231
- Laboratories:
  - Section 101: Mondays 2:30-5:20 PM in SSC 3305
  - Section 102: Tuesdays 2:30-5:20 PM in SSC 3305

### 1.4 Final Exam

There is no final exam in this course.

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## 2 Instructional Support

### 2.1 Instructional Support Team

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|--------------------------|------------------------|
| <b>Instructor:</b>       | Dr. Patricia Wright    |
| <b>Email:</b>            | patwrigh@uoguelph.ca   |
| <b>Telephone:</b>        | +1-519-824-4120 x52719 |
| <b>Office:</b>           | SSC 3468               |
| <b>Lab Co-ordinator:</b> | Dr. Colin DeMill       |
| <b>Email:</b>            | cdemill@uoguelph.ca    |
| <b>Telephone:</b>        | +1-519-824-4120 x56557 |
| <b>Office:</b>           | SSC 2505               |

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## 3 Learning Resources

There is no textbook. Students are required to read articles from the primary literature.

### 3.1 Required Resources

#### ZOO\*4170 Laboratory Manual (Lab Manual)

- The lab manual will be available as a PDF online through the courselink website

#### Courselink (Website)

<https://courselink.uoguelph.ca>

This course will make use of the University of Guelph's course website on D2L (via Courselink). Consequently, you are responsible for all information posted on the Courselink page for ZOO\*4170. Please check it regularly.

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## 4 Learning Outcomes

### 4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Cooperate and collaborate in small groups to perform a diverse array of laboratory experiments using techniques taken from the fields of molecular biology, biochemistry, neurophysiology, endocrinology, muscle- and cardio-physiology.
2. Analyze physiological laboratory data and write lab reports detailing the results.
3. Develop math skills for data analysis and bioinformatics using a problem-based approach and exercises.

4. Appreciate the applicability of the lab exercises to the body of scientific literature by applying insights gained in the lab to the reading and synthesis of primary research articles.
  5. Practice and demonstrate advanced presentation skills in scientific communication by developing a group presentation.
  6. Critique and provide constructive feedback for peers; incorporate feedback from peers.
  7. Synthesize information from current literature then design and deliver an individual oral presentation.
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## 5 Teaching and Learning Activities

### 5.1 Lectures

Lectures will be held in MCKN 231 on Tues and Thurs 10-11:20am. This course differs from most others in that the lecture material largely supplements the laboratory experience. The course is "learner-centred". The focus of the lectures will be in developing oral presentation skills and constructive critical peer review skills using the information covered in labs as inspiration. Initially, classic studies in the primary literature will be analyzed to provide context for the labs; afterwards, students will choose a contemporary topic in comparative animal physiology about which to research and present to the class.

### 5.2 Laboratories

Participation in laboratory sessions is mandatory. The initial six laboratory exercises are done simultaneously by all student groups, but each group does a different exercise on the same day (i.e. each group rotates through the first six exercises). For exercises #7 and #8, half of the class will do one exercise on the same day while the other half will carry out the other experiment. Group-specific laboratory schedules will be determined during the first intro lab. Maximum group size is three students. Every student must attend and participate in all labs in order to get credit for the lab report. No alternate assignments will be accepted for any of the lab exercises. Students are asked not to take photos or videos in the lab unless directly related to lab activities. This course involves participation in laboratory exercises that use animals. If you are opposed to this participation then you have two options. 1. You can choose not to participate in some labs and forfeit those marks. 2. You can take an alternate physiology course that does not have a lab component.

### 5.3 Schedule

| Lecture Date | Lecture Topic | What is Due | Lab Date | Lab Topic |
|--------------|---------------|-------------|----------|-----------|
| Jan 7        |               |             | Jan 6/7  | NO LABS   |

|           |                         |                               |           |           |
|-----------|-------------------------|-------------------------------|-----------|-----------|
| Jan 9     |                         |                               |           |           |
| Jan 14    |                         |                               | Jan 13/14 | Lab Intro |
| Jan 16    |                         |                               |           |           |
| Jan 21    |                         |                               | Jan 20/21 | Labs 1-6  |
| Jan 23    |                         |                               |           |           |
| Jan 28    |                         | Group lab report 1, Jan 27/28 | Jan 27/28 | Labs 1-6  |
| Jan 30    |                         |                               |           |           |
| Feb 4     |                         | Group lab report 2, Feb 3/4   | Feb 3/4   | Labs 1-6  |
| Feb 6     |                         |                               |           |           |
| Feb 11    |                         | Group lab report 3, Feb 10/11 | Feb 10/11 | Labs 1-6  |
| Feb 13    |                         |                               |           |           |
| Feb 17-21 | NO CLASS – READING WEEK |                               | NO LABS   |           |
| Feb 25    |                         | Group lab report 4, Feb 24/25 | Feb 24/25 | Labs 1-6  |
| Feb 27    |                         |                               |           |           |
| Mar 3     |                         | Group lab report 5, Mar 2/3   | Mar 2/3   | Labs 1-6  |

|        |  |                              |           |          |
|--------|--|------------------------------|-----------|----------|
| Mar 5  |  |                              |           |          |
| Mar 10 |  | Group lab report 6, Mar 9/10 | Mar 9/10  | Labs 7-8 |
| Mar 12 |  |                              |           |          |
| Mar 17 |  | Group lab report, Mar 16/17  | Mar 16/17 | Labs 7-8 |
| Mar 19 |  |                              |           |          |
| Mar 24 |  | Group lab report, Mar 23/24  | Mar 23/24 | Labs 7-8 |
| Mar 26 |  |                              |           |          |
| Mar 31 |  | Group lab report, Mar 30/31  |           |          |
| Apr 2  |  | Individual lab report Apr 3  |           |          |

## 6 Assessments

### 6.1 Marking Schemes & Distributions

| Name  | Scheme A (%) |
|---|--------------|
| Group Lab Reports                                       | 42           |
| Lab book  | 8            |
| Individual Lab Report                                   | 10           |
| Lecture Component (based largely on oral presentations) | 40           |
| Total   | 100          |

## 6.2 Assessment Details

### Lab work (60%)

Date: Labs 1-8

- Group lab report for labs 1-6 and 8, 5% each = 35%
- Group lab report for lab 7 = 7%
- Individual lab book = 8%
- Individual lab report = 10%
- Double space all text in all reports.
- Group lab reports will consist of a result section and a detailed answer to a specific question or exercise associated with each lab.
- One individual lab report will consist of Introduction, methodology, results and discussion.
- All graphs should be made with an appropriate graphics program.
- Reports may be written as a group report or as an individual report.
- The results section should follow the format used by The Journal of Experimental Biology (<http://jeb.biologists.org/>). Select a few articles from this journal to see how the results section is written and how the figures and tables are presented.
- Results. Limit the results to answer the questions posed in the laboratory manual and condense them as comprehensively as possible. Give the findings as nearly as possible in the terms in which the observations or measurements were made so as to avoid confusion between facts and inferences. State in the text noteworthy findings from each table and figure, and avoid restating in the text what is clear from the captions. Theory and inference must be clearly distinguished from what was observed, and should not be elaborated upon in the results section.
- Tables. Tables are used to present repetitive data and should be as economical of space as possible. Each table should be on a separate page and numbered with Arabic numerals. Use horizontal lines above and below the headings and below the columns, and seldom elsewhere. Never use vertical lines; leave extra space instead. Table captions should be succinct and identify the purpose of the table sufficiently well to allow the table to stand on its own. Indicate table footnotes by superscript lowercase letters and type them below the table.
- Figures. All lines must be sufficiently thick and all symbols, superscripts,

subscripts, and decimal points must be in good proportion to the rest of the drawing and large enough to allow for easy viewing. Captions should identify the purpose and content of the figure sufficiently well to allow the figure to stand on its own.

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## 7 Course Statements

### 7.1 Late Policy

Group Lab reports due by 2:30 on lab day in dropbox.

The individual lab report is due by 11pm on Friday April 3rd in dropbox.

A penalty of 10% per day will be applied to late assignments.

### 7.2 Absence & Illness

- If you are absent from classes during the semester, you will be expected to make up missed lecture material on your own. Medical or compassionate documentation is required to miss any lab. This documentation must be submitted to Colin DeMill as soon as possible after your absence. If no documentation is provided, the assigned mark will be 0%.
- When an assignment is missed, you must notify the instructor in writing, with your name, id#, and e-mail contact as soon as possible. If requesting academic consideration on medical or compassionate grounds, be prepared to provide supporting documentation. Dates of incapacitation stated on the note must, of course, cover the date of the missed assignment. The original paper copy of the note must be delivered to the course instructor (for missed autorhythm report or missed presentation) or lab instructor (missed lab) within 5 days of the missed assignment (weekends included), or a mark of 0% will be assigned. Notes will not be returned.
- See the undergraduate calendar for information on regulations and procedures for Academic Consideration:  
[http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08\\_ac.shtml](http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08_ac.shtml)

## 7.3 Lab Assignments

Keep a detailed lab notebook and back up copies of all Lab Assignments because you may be asked to resubmit work at any time.

## 7.4 Course Evaluation Information

- CCS now provides the U of G Online Course Evaluation System in a secure, online environment. End of semester course and instructor evaluations provide students the opportunity to have their comments and opinions form part of the information used by Promotion and Tenure Committees in evaluating the faculty member's contributions in the area of teaching. Course evaluations are now conducted through this web site. Login with your central email account login ID and password: [https://courseeval.uoguelph.ca/CEVAL\\_LOGIN.php](https://courseeval.uoguelph.ca/CEVAL_LOGIN.php)
- Please Note: Instructors do **NOT** receive evaluations until the end of exam period. Furthermore, evaluations are anonymous, unless you specifically indicate you want to acknowledge your comments.

# 8 Department of Integrative Biology Statements

## 8.1 Academic Advisors

If you are concerned about any aspect of your academic program:

- Make an appointment with a program counsellor in your degree program. [B.Sc. Academic Advising](#) or [Program Counsellors](#)

## 8.2 Academic Support

If you are struggling to succeed academically:

- Learning Commons: There are numerous academic resources offered by the Learning Commons including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist. <http://www.learningcommons.uoguelph.ca/>
- Science Commons: Located in the library, the Science Commons provides support for physics, mathematic/statistics, and chemistry. Details on their hours of operations can be found at: <http://www.lib.uoguelph.ca/get-assistance/studying/chemistry-physics-help> and



<http://www.lib.uoguelph.ca/get-assistance/studying/math-stats-help>

## 8.3 Wellness

If you are struggling with personal or health issues:

- Counselling services offers individualized appointments to help students work through personal struggles that may be impacting their academic performance. <https://www.uoguelph.ca/counselling/>
- Student Health Services is located on campus and is available to provide medical attention. <https://www.uoguelph.ca/studenthealthservices/clinic>
- For support related to stress and anxiety, besides Health Services and Counselling Services, Kathy Somers runs training workshops and one-on-one sessions related to stress management and high performance situations. <http://www.selfregulationskills.ca/>

## 9 University Statements

### 9.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

### 9.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

### 9.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of

Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

## 9.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

## 9.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance and not later than the 40th Class Day.

For Guelph students, information can be found on the SAS website

<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website

<https://www.ridgetownc.com/services/accessibilityservices.cfm>

## 9.6 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community—faculty, staff, and students—to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an

environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

## 9.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

## 9.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars

<https://www.uoguelph.ca/academics/calendars>

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