

University of Toronto Scarborough – Department of Biological Sciences
BIOD43 – Animal Movement and Exercise – Winter 2017

Course Instructor: **Dr. Jason Brown**
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Office: Portable 104, Room 110
Office Hours: Wednesdays 2-8pm, Thursdays 8-11am

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Course Description: A lecture and seminar/discussion course covering integrative, comparative animal locomotion and exercise physiology. Topics will include muscle physiology, neurophysiology, metabolism, energetics, thermoregulation and biomechanics. These topics will be considered within evolutionary and ecological contexts. Students will be expected to give a brief oral presentation on recently published basic research involving animal locomotion and/or exercise physiology.

Prerequisites: BIOC33H3 or BIOC34H3

Exclusions: HMB472H

Recommended Preparation: Completion of an A-level physics course

Lectures: Mondays 2:10-3pm and Wednesdays 1:10-2pm, MW160

Tentative Lecture Topics:

- 1 – Physics of Movement: Motion, Forces, and Energy
- 2 – Physics of Movement: Fluids
- 3 – Physiology of Movement: Muscle, Nervous, and Skeletal Physiology
- 4 – Movement on Land: Walking, Running, Jumping, Swinging, Climbing, and Crawling
- 5 – Movement in Air: Gliding, Soaring, Hovering, and Powered Forward Flight
- 6 – Movement in Water: Fish Swimming, Jet Propulsion, and Movement on the Water's Surface
- 7 – Cost of Locomotion
- 8 – Exercise Physiology: Cardiovascular, Respiratory, and Metabolic Responses to Exercise

Lecture notes will be posted (in PowerPoint format only) on Blackboard ~24 hours before each lecture. **NOTE: I reserve the right to make changes to the lecture notes after they are posted.**

Tutorials: Thursdays 11:10am-1pm (SW403) *or* Thursdays 3:10-5pm (AC334)

Textbook: There is no required textbook for this course; however, in my experience, many students enjoy having a textbook to supplement their lecture notes. If you so desire, I would recommend the following textbooks:

Principles of Animal Locomotion, 2013, by R. McNeill Alexander.

→ This book is available electronically via the UTSC library website

Animal Locomotion, 2003, by Andrew Biewener

→ This book is on course reserve at the UTSC library

Only material covered in class will be subject to examination.

Evaluation:

Term Tests	30%	(20% best; 10% worst)
Tutorial Project	35%	
Final Exam	35%	

Important Notes Regarding Evaluations:

Term Tests

There are two Term Tests in this course. The dates and times of the Term Tests will be determined by the Registrar's office during the first few weeks of the semester, and I will post this information on Blackboard as soon as it is available.

The Term Tests are not cumulative. The lectures covered on each Term Test will be announced in class and on Blackboard. Term Tests will be 2 hours and will comprise of short answer questions only. **Students will be evaluated based on the reasonableness and clarity of their written answers to the questions.** Students will have some choice with regards to which questions they answer (e.g., answer 1 of 2 short answer questions). **The Term Test questions will require students to think critically and creatively about the lecture content as students will be expected to explain novel observations and solve problems. This reflects my belief that undergraduate students need to develop not only their scientific knowledge but also their competency for thinking, reasoning, and scientific inquiry. Some questions may also require that students utilize knowledge gained from other biology courses, which reflects that, as senior biology students, you should be capable of synthesizing concepts from various biological disciplines.**

To help student prepare for Term Tests, at the end of every week, an *optional* quiz (here *optional* means not worth any marks) will be posted on Blackboard. These quizzes will allow students to i) assess their understanding of the lecture content, and ii) think critically and creatively about lecture content by using it to explain novel observation and solve problems. ***Students are strongly encouraged to discuss these quizzes with the course instructor when they encounter any difficulties, either by email or during office hours (preferred).***

If you know **in advance** that you cannot write a Term Test at the scheduled time because it conflicts with some other **valid activity**, please notify me as soon as possible so that we can make arrangements for you to write the Term Test at an alternative time. **Any such alternative time must be before the scheduled date of the Term Test.**

If you miss a Term Test due to medical illness, then you must submit a detailed UTSC Medical Certificate filled out by the physician who saw you on the day of the Term Test. This note must be submitted to the course instructor as soon as possible following the Term Test, whether in person or via email. Other medical notes will not be accepted, and if the UTSC Medical Certificate is not completed to the satisfaction of the course instructor, it may be refused. The UTSC Medical Certificate can be found via the following link:

http://www.utsc.utoronto.ca/~registrar/resources/pdf_general/UTSCmedicalcertificate.pdf.

If you miss a Term Test for any other valid reason, please consult with the course instructor as soon as possible. The course instructor will determine whether the reason given for a missed Term Test is valid in accordance with university policies. Also, the course instructor may ask for any documentation required to verify the reason given.

Students who miss one Term Test for a valid reason (medical or otherwise) will not be permitted to write a make-up Term Test; rather, the weight of the remaining Term Test will be increased to 30% of their final grade. Students who miss both Term Tests for valid reasons will not be permitted to write make-up Term Tests; rather, the weight of their Final Exam will be increased to 65%.

Students who miss a Term Test for any invalid reason will receive a grade of zero for that Term Test.

Tutorial Project

The details of the Tutorial Project, including a detailed evaluation scheme, will be outlined in a PowerPoint presentation given during the first tutorial session. This presentation will be posted on Blackboard along with this syllabus and will constitute part of this syllabus.

Final Exam

The Final Exam (3 hours) will be scheduled by the Registrar's office (April 5-22). The Final Exam will cover all material covered in the lectures throughout the course, though it will place considerable emphasis on the material covered since the last Term Test. It will have the same format and emphases as the Term Tests.

Accessibility Needs:

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the AccessAbility Services Office as soon as possible. I will work with you and AccessAbility Services to ensure you can achieve your learning goals in this course. Enquiries are confidential. The UTSC AccessAbility Services staff (located in S302) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations (416) 287-7560 or ability@utsc.utoronto.ca.

Academic Integrity:

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto's *Code of Behaviour on Academic Matters* (<http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences include, but are not limited to:

- In papers and assignments:*
- using someone else's ideas or words without appropriate acknowledgement
 - submitting your own work in more than one course without the permission of the instructor
 - making up sources or facts
 - obtaining or providing unauthorized assistance on any assignment.
- On tests and exams:*
- using or possessing unauthorized aids;
 - looking at someone else's answers during an exam or test
 - misrepresenting your identity
- In academic work:*
- falsifying institutional documents or grades
 - falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. There are other offences covered under the Code, but these are the most common. ***Please respect these rules and the values that they protect.***