

## **Biology 4211: Mammalogy**

Origin, relationship, and structure of mammals. A survey of the families of living mammals: past and present distribution of important groups. Special attention is given to Ontario forms.

### **Instructors, Time and Place**

Course Instructor: Dr. Brian McLaren, BB-1005B – 343-8010 ext. 8686 or brian.mclaren@lakeheadu.ca

Lectures RC-1003: Mondays and Wednesdays 10:00-11:20 am.

Lab Instructor: Dan Brazeau, CB-3020 – 343-8010 ext. 7739 or dbrazeau@lakeheadu.ca

Lab CB-3015 **unless otherwise indicated**: Monday 2:30-5:20 pm.

Teaching Assistants: Katie Lockhart, cmlockha@lakeheadu.ca; Marin Loncar, mloncar@lakeheadu.ca

### **Required Texts**

*Wild New World: The Epic Story of Animals and People in America*. 2022, by Dan Flores, W. W. Norton & Company, New York.

*Mammalogy: Adaptation, Diversity and Ecology*. 2020 (5<sup>th</sup>) edition, by Feldhamer, Drickamer, Vessey, Merritt, and Krajewski. Johns Hopkins. (**Fifth edition** has the current taxonomy you will be learning.)

*Note on the texts*: It is your responsibility to read the assigned portions of each text in a timely fashion. Exams will test material not necessarily covered in lectures. To help you organize your reading in the main text (Feldhamer et al. 2020), focus on the words highlighted in **bold type**. When working through Flores's book, make use of a **concept map** (notes to follow the main concepts). The lecture portion of this course emphasizes **concepts**, while your **practical** experience comes from directed and independent work in the lab sessions.

*Note on lab portion*: The text will be available in the lab for group work: *Mammals of the Great Lakes Region*. **2017 edition**, by A. Kurta, University of Michigan Press, Ann Arbor. **Students can opt out of portions of the lab work involving carcasses if they arrange prior permission with Dan Brazeau.** Dissections and digestions constitute a minor risk of biohazards; students must be trained to a Biosafety Level 1 use of facilities for these labs. You will be required for dissecting labs to bring in your own dissection kit, or one you sign out from Dan. There will be one optional, but informative field trip to the International Wolf Center, Ely Minnesota. It will be held on a Saturday and Sunday, March 23-24. We will leave at 9:00 am on Saturday and plan to return to Thunder Bay at 8:00 pm on Sunday. Please sign up by paying \$75 to Dan Brazeau by January 31. The international border crossing will require you to have a valid passport or NEXUS card. Bring a copy of your passport, your health card and your LUSU health insurance identification number to Dan with your payment if you are travelling to Ely with us.

### **Goals of the Course**

1. To understand the classification, structure, and natural history of mammals, including physiological, behavioral, and ecological adaptations.
2. To become familiar with some field and laboratory techniques involving study of mammals.
3. To learn about the distribution and identification of mammals, especially those species found in the western Great Lakes region.
4. To become acquainted with how mammals are valued by people.

## Assignments, Due Dates and Grading

<b>LECTURE MARK BREAKDOWN</b>		
<b>Weekly Quizzes and Participation</b>	Quizzes and “Top Hat” facilitated discussion will occur each class on assigned readings in the Feldhamer et al. text. Your scaled mark includes participation in the quizzes and on correctness of responses.	<b>10%</b>
<b>Wild New World: Quiz on February 14</b>	Questions on Flores’s interpretation of the ecological history of North America, emphasizing mammals, and its socio-political history, emphasizing the modern conservation movement.	<b>10%</b>
<b>Mammals as part of human life: a report.</b> Plan to be communicated to Dr. McLaren on February 14; <b>report due April 8.</b>	Each student will develop a research question to answer in essay format (3-5 pages double-spaced) using literature and a questionnaire with someone who works regularly with mammals. Ideas include a dairy farmer, a trapper, a veterinarian, a police dog trainer, handlers at Fort William Historical Park.	<b>10%</b>
<b>WINTER STUDY BREAK</b>		
<b>Student presentations</b> Please see the rubric below the table. Refer to chapters 11-21 in Feldhamer et al. To be scheduled <i>after the Study Break.</i>	Student pairs will present on <b>main characteristics</b> used to classify members of a mammal (sub) order together, and provide detailed information on an extinct and an extant member of the (sub) order. <b>Plan 10-15 minutes</b> for a class presentation.	<b>5%</b>
<b>Final exam - Date TBA</b>	The final exam will cover all components of the course <b>textbook</b> in describing six mammals from a shortlist	<b>20%</b>

### Rubric for student presentations (total 50):

Has information on the taxon’s evolution been provided? (1-5 for detail) Are the two examples rich in detail? (1-10 for detail) Are other examples mentioned to assist the classification? (1-5 for organization) Are adaptations discussed? (1-5 for detail) Is the classification explained? (1-5 for detail) Has class discussion been prompted? (1-5 for earnest discussion) Are questions well answered? (1-5 for detail)

<b>LAB MARK BREAKDOWN</b>		
<b>Podcast Assignment</b>	Students will work in groups to create a podcast pertaining to wild mammals. We will choose topics as a group in the first lab.	<b>5%</b>
<b>Lab Participation</b>	Includes participation during Independent Project sessions, properly cleaning up workstations and completion of in-class assignments.	<b>10%</b>
<b>Necropsy Lab Report</b>	Students will work as a group in the lab to complete a dissection/necropsy on a mammal. Students submit a photo essay documenting the findings of this necropsy, including insights into comparative anatomy between herbivorous and carnivorous mammals.	<b>5%</b>
<b>Lab Quiz</b>	Quiz on the identification of mammalian species using study skins and skulls.	<b>15%</b>
<b>Independent Project Final Grade</b>	Students are assessed on their final independent project in the last lab by the instructor, TA and classmates.	<b>10%</b>

### Organization of the Course

- Topic 1. Reasons to study mammals and techniques used to study mammals*  
Feldhamer, chapters 1 & 2; Lab: introduction to preparation of specimens and dissections; N.B. this portion of lab work is an **independent** project that you will keep on track during the first half of the semester; mammal snow tracking
- Topic 2. Early evolution, shifting dominance from reptiles to mammals*  
Feldhamer, chapters 3-5, 10 & 19; Flannery, Acts 1 & 2
- Topic 3. Modern North American fauna and conservation issues*  
Flannery, Acts 3, 4 & 5; Lab: introduction to boreal mammals; N.B. this portion of the lab work leads to a portion of your practical exam
- Topic 4. Evolution of endothermy*  
Feldhamer, chapter 8; Lab: dissections.
- Topic 5. Implications of body size and body shape*  
Feldhamer, chapters 6 & 8; several supplemental readings; Lab: introduction to morphometrics.
- Topic 6. Feeding and trophic relationships*  
Feldhamer, chapters 7 & 24; Lab: dissections.
- Topic 7. Behaviour and sociality*  
Feldhamer, chapters 22-23; Lab: ethogram analysis of wolf behavior.
- Topic 8. Population dynamics and life history*  
Feldhamer, chapters 25 & 26.

**Academic Misconduct:**

Please refer to the Student Code of Conduct - Academic Integrity for a complete description of your rights and responsibilities: <https://www.lakeheadu.ca/students/student-life/student-conduct/academic-integrity>.

Plagiarism of any kind will not be tolerated and will result in a mark of zero for the work. Cheating of any kind during lab or lecture exams will not be tolerated and will result in a mark of zero for the test and potentially further sanctions. Failure to follow the required rules for academic integrity for either plagiarism or cheating are likely to affect your academic record and may result in additional sanctions.

**NOTE ON HEALTH AND WELL-BEING**

As a university student, you may sometimes experience mental health concerns or stressful events that interfere with your academic performance and negatively impact your daily activities.

All of us can benefit from support during times of struggle. If you or anyone you know experiences academic stress, difficult life events or feelings of anxiety or depression, Student Health and Wellness is here to help. Their services are free for Lakehead Students and appointments are available. You can learn more about confidential mental health services available on and off campus at [lakeheadu.ca/shw](http://lakeheadu.ca/shw).

Remember that getting help is a smart and courageous thing to do for yourself, for those you care about, and for those who care about you. Asking for support sooner rather than later is almost always helpful.