**BIO-217 Mammalogy-Lab**

 **Fall 2019**

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| **Course Instructor****Laura J May-Collado, Ph.D**.217 Marsh Life Science BldgOffice Hours: MF 1-3 p.m. or appointmentE-mail: lmaycoll@uvm.edu | **T.A.****Emily Beasley**211 Marsh Life Science BuildingOffice hours: M 2-3, T 1-2 or by appointmentE-mail: ebeasley@uvm.edu |

**Course Description**

The lab is an integral part of the course. The lab work accounts for 40% of your grade in this course. 12:00 to 3:00 pm on Wednesdays or 1:15 to 4:15 pm on Thursdays at the Blundell House in the Red Stone Campus.

The major objectives of this lab are:

1. To provide you with a wealth of knowledge about mammals,
2. To reinforce the use of the scientific method to address questions and problems,
3. To utilize the use of data and statistical, bioacoustics, comparative, and other methods to address hypotheses, and
4. To integrate the summarizing of data by means of figures and table combined with scientific writing to prepare a research paper.

**Laboratory Materials**

All laboratory materials will be posted to Blackboard. Other lab resources include:

Martin, RE, Pine, R. H., and A. F. DeBlase. 2001. A Manual of Mammalogy with keys to families of the world. 3rd edition.

**COURSE POLICIES**

**Absence Policy.** For planned absences, you have the option of attending another lab section if you notify the instructor at least a week in advance of the absence. In the event of unplanned absences, email the instructor to set up a time to retake any missed quizzes. *All other assignments are due by the original deadline.*

**Late Work Policy**. Assignments turned in within 24 hours of the deadline will receive a 5% late penalty. After 24 hours this penalty will increase to 10%. Assignments will not be accepted more than 4 days after the deadline.

Shit Happens Clause: Invoking the Shit Happens Clause prior to the due date of an assignment will automatically result in a 3-day extension, no questions asked. To invoke the clause, contact the lab instructor and specify which assignment will receive the extension. (Note: assignment extensions via ACCESS do not fall under this clause. If you qualify for ACCESS accommodations, please see the Administrative Reminders section at the end of this syllabus).

* *Can be applied to…* reading assignments, reports, or any written assignments associated with the independent research project. If you are working in pairs for the research project, each of you can receive the extension if neither of you have previously invoked the clause.
* *Cannot be applied to…* quizzes, exams, presentations, or other in-class work.

This clause may only be invoked once per student during the duration of the course. Please note that this clause is for emergencies **only**; it is not a substitute for time management.

**Grading**

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| Quizzes & Assignments (6 quizzes, 3 assignments, 1 eval, 10 pts each) | 100 |
| Practical Report | 25 |
| Field Notes\* | 25 |
| Practical exam | 150  |
| Independent Research  | 350  |
| **Total** | **650**  |

**Laboratory Quizzes & Assignments:** Reading assignments and a mid-semester course evaluation must be submitted prior to the beginning of lab on the day they are due. Quizzes will cover material from the previous lab unless otherwise noted. See schedule below for details.

**Report**: You will turn in one practical report. This report is meant to give you tools used in mammalian studies for your potential projects. See calendar for due date.

**Laboratory Practical:** Total 150 pts. The exam is done during your scheduled lab time.

* **Mammals of New England**: Closed book with coverage of identification, morphology, taxonomy, adaptations, natural history. (100 pts)
* **Mammals of the World**: Key [supplied] may be used; coverage restricted to identification, morphology, and taxonomy. (50 pts)

**Field Trip:** You are invited to participate in one of two scheduled field trips: whale watching September 28 or small mammal trapping October 4-6. Participation is mandatory (with one exception- see below). Grading will be based on participation and field notes.

\*Students who can’t attend a field trip may opt to dedicate time to the museum under the supervision of Dr. Bill Kilpatrick. Only 4 students are allowed to take this exemption. These students will have to show evidence of regular work at the museum. This is a great opportunity to learn about museum curation, and to do a research project with the museum collection.

**Independent Research Project**

The independent project is a research project, **NOT A REVIEW!** Students can work individually or in pairs. However, expectations will be higher for group projects. We expect students to develop questions. We expect students to take charge of their independent projects, be independent and resourceful readers of scientific literature related to their projects and demonstrate initiative in learning new programs or analyses that can help them address their research questions. We have designed workshops to help you design questions that are achievable during the time frame we have, but that at the same time allow you to ask interesting questions. In the past some of these questions have resulted in publishable manuscripts! You are encouraged to use the data resources provided on Blackboard instead of aiming to generate field data yourself, and at all times you should be discussing your ideas with Dr. May-Collado and myself.

**Proposal**: The proposal must consist of the following parts.

* **Introduction** –
	+ ***Background*** to problem with citations of papers or other sources that document the information you are presenting. This background should include the observations that lead to your question or hypothesis.
	+ ***Purpose and scope*** - Statement of the purpose of your paper, this may be how you are testing your hypothesis. If you use hypothesis you need to make predictions about the hypothesis. Predictions will also go here.
	+ ***Significance:*** How does your project advance knowledge on this field? How does your project benefit society?
* **Materials and Methods** - What type of data have you found and what additional data are you going to try to find? How will the data you collect be analyzed to address your objectives, questions or hypothesis? It is important to make it clear how the scientific method will be used to test or address either your hypothesis or the predictions you expect if the hypothesis is true.
* **Research Plan** - Schedule of steps to be accomplished with deadline dates.
* **Literature Cited** - Full reference to the papers cited in the introduction and materials and methods sections. Use format from Journal of Mammalogy.
* **You will turn in an electronic version to both Laura and myself**
* **Based on areas of expertise students will be assigned to Laura or myself as their main advisors regarding the project.**

**Note:** I recommend doing a serious literature review of your topic of interest! The more effort you put into your proposal, the easier it will be to write your manuscript at the end of the semester.

**Independent Research Project Grading**

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| Research Proposal (due Sep. 27) | 100  |
| Update-Summary of Results (Nov.1) | 50 |
| Manuscripts (draft+final) (Draft: Nov. 15, Final December 6) | 100 |
| Oral presentation (December 4/5 depending on your lab section) | 100 |
| **Total** | **350** |

**Data collection and analysis:**

During the semester we will introduce to several data sources and types of analysis regularly use in mammals. We will dedicate the labs on October 30/31 to guide students to explore their data and/or start analysis. You need to bring your data set!

**Writing your research paper**

We will use the format of *Journal of Mammalogy*. Go to the journal and download the guidelines for authors. I recommend using a citation manager such as Zotero or Mendeley while writing your manuscript Your paper will be graded based on you following the corresponding guidelines.

*Author Guidelines for J.Mamm.* <https://academic.oup.com/jmammal/pages/General_Instructions>

**Update-Summary of Results**: This update should present a summary of preliminary results and their significance in relation to your question. **Electronic submission to both instructor and TA.**

**Research Paper Submission I (draft):** This first submission is not an ‘incomplete draft’, we expect a complete manuscript in format with the selected journal. After figures, tables, and stats are done I recommend writing an outline or a short version of the abstract. This will provide focus and a framework to write the complete draft. Save every version of your draft separately for you to see your own progress. I recommend that you read your paper over carefully and see if you can find mistakes or identify ways in which your paper could be improved. As you write keep track of the references and write the Literature Cited section as you are writing the paper rather after you are finished.  **Electronic submission to both instructor and TA.**

**Research Paper Submission II (final):** You are expected to submit a final paper that addressed the comments and corrections from your assigned advisor. The final submission needs to come with an Author letter detailing how each the advisor comments were addressed point by point. **You will turn in one electronic version and a hard copy on the day of your final presentation.**

**Oral Presentation:** There are three possibilities on how to present your research.

1. **Traditional oral presentations**. You will have 10 minutes, 8 minutes for your presentation, and 2 minutes for questions. If you decided on this format follow this guidelines
* Please bring your presentations (email or thumb drive) to your GTA at least 1 hour prior to your lab period.
* Please embed any videos or audio within the presentation
* Also include ALL videos & audio files in a separate folder on your thumb drive. This will enable us to correct any problems on site.
1. **Speed talks**. A speed talk is a four-minute presentation during which you may present key-ideas, results and their meaning/implication. Three slides should be sufficient. Questions will be asked during a 6-minute period at the end of the session.  Please bring your presentations to your GTA 24-hours prior to your presentation.
2. **Video presentation**: A video presentation is of the same length as a speed-talk (four minutes) but created using various media such as high-resolution video, animation and narration. Authors should use these various media in a creative manner to clearly express the purpose of the study, results and their implication and to be understood not only by scientific peers but also by a wider audience. Questions will be asked during a 6-minute period at the end of the session.  Please bring your video to your GTA 24-hours prior to your presentation. Video guidelines and tips here: <http://www.smmconference.org/videopresentationfaq> Use available resources, don’t go crazy!

**Administrative Reminders:**

If you qualify for accommodations because of a disability, please submit to Dr. May-Collado a letter from ACESS (http://www.uvm.edu/access) in a timely manner (by the end of the second week of classes) so that your needs may be addressed.

All students of the University of Vermont are responsible for knowing and adhering to the academic integrity policy of the institution. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Coordinator of Academic Integrity or the Academic Integrity Council.

Material presented in this course may not be sold and are the intellectual properties of the instructor and others.

Lab Calendar

(This calendar is subject to change)

**Any report or draft noted as due for a week will need to be submitted electronically by that corresponding Friday by 5pm via email to Laura and Emily (unless otherwise instructed).**

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| **Date** | **Lab** | **Due** |
| Aug.28-29 | Intro to Mammals: characteristics and value of museum collections |  |
| Sep. 4-5 | Skulls and Teeth Morphology-with introduction to orders key | Reading Assignment 1 |
| Sep. 11-12 | Unmanned Aerial Vehicles to study marine mammals-Guest Eric Ramos Bioacoustics (Dr. May-Collado) | Quiz 1 |
| Sep. 18-19 | Mammalian Research Tools: Programming & Data Management (Emily), | Reading Assignment 2 |
| Sep. 25-26 | Monotremes and MarsupialsWhale Field Trip (Sep. 28) | **Proposal** |
| Oct. 2-3 | RodentiaRodent Field Trip (Oct. 4-6) | Quiz 2 |
| Oct. 9-10 | LagomorphaEulipotyphla | Quiz 3**Report** |
| Oct. 16-17 | Paenungulata: Afrotheria and Xenarthra | Mid-Semester Evals |
| Oct. 23-24 | Sundatheria: Dermoptera, Scandentia, and Primates | Quiz 4 |
| Oct.30-31 | Data Analysis Day | Reading Assignment 3**Project Updates** |
| Nov. 6-7 | Artiodactyla, Perissodactyla, Chiroptera | Quiz 5 |
| Nov. 13-14 | Carnivora and Pholidota | Quiz 6**MS Draft** |
| Nov. 20-21 | **Lab Exam (Practical)** | Field Notes |
| Nov. 27-28 | Thanksgiving (No classes) |  |
| Dec. 4-5 | **Mammalogy Symposium** | **Final MS** |