This syllabus is a general representation of the course as previously offered and is subject to change.

BIOL 363 – Laboratory in Animal Physiology

General Course Syllabus (as of January 2020)

About the Course:

Course Description: A course on experimental studies in animal physiology.

Course Format: Lecture, Laboratory, and Tutorial. 1 hour of lecture and 4 hours of practical lab work and tutorial per week. Students must register into the matching labs and tutorials, as the tutorial hour is scheduled just before and after the respective lab section.
Credits: 2
Pre-requisites: BIOL 204. Restricted to Majors and Honours students in Biology, Nutritional Sciences and Biophysics.
Co-requisites: BIOL 361.

Course Learning Objectives:

The objectives of BIOL 363 are:

- To give students competent lab skills in animal physiology.
- To prepare students to carry out independent research in post graduate studies (e.g. Master's degree) or independent investigation in a biological related field (health care, law, etc.).

By the end of the course students should be able to:

1. **Acquire basic laboratory skills** to safely and confidently handle live animals, human subjects, and basic physiological lab equipment; execute proper lab techniques such as isolation and extraction of organs and tissues, measuring biometrics, or preparing solutions from appropriate chemical reagents; and gain proficiency in using Excel, Capstone and LabPro to collect and analyze data.

2. **Become proficient in applying scientific methodology in carrying out a research project,** from proposing and justifying hypotheses; predicting expected experimental results given protocols and hypotheses; designing and evaluating experimental protocols; analyzing individual or class data with large sample sizes; interpreting and comparing data with predicted results and those of similar experiments in the literature.

3. **Develop information literacy** to determine what information is needed (and in what depth) when faced with a problem to solve; find needed information effectively and efficiently; critically evaluate the reliability of the information (peer-reviewed literature); and manage information collected.

4. **Develop scientific writing** skills to compose a lab report in a journal article format; make graphs to communicate trends in data; communicate ideas in a clear and organized way; explain experimental results using current knowledge of animal physiology; and concisely review the relevant literature on similar or related experiments.

5. **Understand basic concepts in Animal Physiology** including: transport of substances across cell membranes; enzymes; digestion; muscle physiology; neurophysiology; metabolic rate; endocrinology; thermoregulation; hematology; cardiovascular & respiratory physiology.

6. **Demonstrate teamwork, leadership, independence, and professional conduct** to work efficiently in a lab environment.

7. **Develop Life skills that will serve them well in their future professional and personal life**: Self-reliance and independent learning; assessing the reliability and validity of information; understanding and integrating information into a coherent framework; critical thinking, analytical and problem-solving; effective communication; professionalism & work ethic; teamwork and collaboration. Most importantly, students will understand that there are many "bad" ways and many "good" ways to tackle a problem and they will feel confident in assessing the pros and cons of each approach, pick one of the good strategies and forge ahead.

Textbooks and Additional Resources:

Required

- **Textbook:** Principles of Animal Physiology (3rd edition) CD Moyes and PM Schulte (Custom Access Code RVP will not be used)
- **iClicker**
- **Non-programmable calculator**;
- **Dissecting kit**: 2 pairs of scissors (medium and fine); 2 pairs of forceps (medium and fine). Available for purchase at the UBC Bookstore.
- **Lab Notebook:** Available for purchase at the UBC Bookstore or at Staples. Criteria:
    - Larger size: approx. 9"x 11"
    - Approx. 200 pages
    - Bound (NO loose pages allowed); either bound spine or spiral binding
    - Students can pre-write page numbers by hand before coming to the lab
    - Recommended that students do not spend too much money on the notebook as it will be kept with the instructor at the end of the year
- **Lab wear**: (Click on the minimum requirements for Personal Protective Equipment (PPE) that an individual must wear in order to enter a UBC wet lab)
    - **100% knee-length, long sleeves white lab coat:** available at the UBC Bookstore

- **Long loose fitting pants** (long socks, leggings, nylons, and skinny jeans are not appropriate)
- **Full Covering Liquid Resistant shoes** (sandals, ballet flats, cloth, and mesh shoes are not appropriate)

Optional:

- **Safety goggles:** will be provided in the lab
- **Laptop**

Evaluation:

Assessment	**Weight**
Prep-lab quizzes & In-lab work	25%
Lab reports and Project	45%
Final lab exam	30%

Participation during lecture: includes Clicker or verbal Q&As. Marked for participation only; no marks are removed for giving the wrong answer. These marks are added up and expressed as a value out of 10. If the participation mark works to the student's advantage, this will replace the lowest mark received in the in-lab work section.

Prep-lab quizzes: quizzes take place at the beginning of each lab. They can be clicker or short answer questions on worksheets. They are open lab notebook only, time limited, and taken individually unless stated otherwise.

In-lab work: includes bench work, in-lab discussion, lab notebook checking, and online quizzes. Assesses the groups' level of preparedness, lab skills, organizational skills and efficiency, data collection and recording skills, teamwork, and behavior. Online quizzes test knowledge on general information about BIOL 363 and lab safety.

Lab reports & Group project: unless stated otherwise, lab reports will be completed as individual assignments.

Final lab exam: this is an open-book written exam. Questions on the final will focus on:

a) experiments, methodology, calculations, results, and interpretation of results obtained in the lab
b) the materials derived but not directly related to the experiments completed in lab.

Course Policies:

Students are expected to be on time for assignment submissions, and responsible for their attendance in all labs and tutorials. Penalties apply for labs and assignments missed without a valid reason - more details will be provided in-class.

Schedule of Topics:

Week	Lecture – Main Topics	Lab and Tutorial – Main Topics
1	Introduction to BIOL 363	No Lab or Tutorial Review online tutorials
2 to 12	Lectures prepare for the coming lab session	Reviewing the Scientific Method Learning how to use Data acquisition software Learning how to write a paper Our inquiry based laboratory exercises as well as students' group projects will be chosen amongst the following topics: • Transport of substances across cell membrane • Enzymes • Hematology • Metabolic rate • Endocrinology • Pharmacology • Muscles & Nerve physiology • Cardiovascular and respiratory physiology • Thermoregulation • Reproduction • Digestion
13	TBA	TBA

TBA: either guest speakers, review sessions or presentation of projects.

University Policies:

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence.

UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom.

UBC provides appropriate accommodation for students with disabilities and for religious, spiritual and cultural observances.

UBC values academic honesty and students ae expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on the UBC Senate website.