Biology 451L – Comparative Physiology Lab – Class Syllabus – Spring 2019

Meeting Times: Wed 12:30-3:20 pm or Thur 12:30-3:20 pm, 242 Wilson Hall
Instructor: Dr. Tyson L. Hedrick, thedrick@bio.unc.edu
Office Hours: Tuesday, 2-3pm, G40a Wilson Hall
Teaching Assistant: Mr. Jonathan Rader
Office Hours: Tues. 1:00–2:30 pm or by appointment, G43 Wilson Hall
Textbook: Hill, R.W., Wyse, G.A., and Anderson, M. (2016) *Animal Physiology. 4th Ed.* Sinauer Associates, Inc.

Course overview:
BIOL 451L is the companion laboratory course to BIOL 451, comparative physiology. In this class students work in small lab teams of 2-4 students to perform experiments and make measurements that further develop the underlying physical and biochemical principles emphasized in the lecture course as a unifying theme for physiology.

Course schedule:
The class schedule is designed around the lecture schedule for BIOL 451. Thus, you should have no additional difficulty in keeping current on the lab background material if you are taking the lab and lecture courses concurrently. Students taking the lab after taking the lecture in a prior year may need additional review. Taking the lab without taking the lecture course is not permitted except by permission of the instructor.

Week of	Topic
January 7	No Lab
January 14	Lab #1: Introduction, software installation, human respiration
January 21	Lab #2: Blood and respiratory pigments - the oxygen dissociation curve of the horseshoe crab
January 28	Lab #3: Circulation and arterial fluid mechanics
February 4	Lab #4: Human metabolism and the diving reflex
February 11	Lab #5: Metabolic rate and exercise in humans
February 18	No Lab
February 25	Lab #6: Temperature regulation and heat exchange
March 4	Lab #7: Osmoregulation and Excretion
March 11	SPRING BREAK
March 18	Lab #8: Muscle contractile properties and electromyography
March 25	Lab #9: Muscle fiber types

April 1	Lab #10: Nervous systems and action potential propagation
April 8	Lab #11: Sensory systems, information processing and control
April 15	No Lab
April 22	Lab Final Exam

Lab Readings:
You will be asked to read or review short sections of the BIOL 451 textbook (*Animal Physiology. 4th Ed.*) as well as additional background material prepared by the teaching staff. Reading assignments and pre-lab questions will be provided by Monday of the week of the lab.

Computers:
Many of the lab exercises will require a laptop computer, used for data acquisition, instrument control and data analysis. We will load a software package, LabScribe, on each of your laptops during the first class meeting. LabScribe is freely licensed for use with the course and is available for Windows, Mac OS and Linux.

Lab dress and behavior:
You need to wear closed-toe shoes to lab. Food and drink, aside from any required by the lab exercises, are not permitted.

Pre-lab questions:
Each lab will include a set of pre-lab questions based on the reading, these are to be typed in the provided Microsoft Word documents and turned in as a printed hard copy at the beginning of each lab session. **Handwritten work, aside from graphs or figures will not be accepted.** You will then immediately grade your own prelab assignments based on a key provided by the teaching staff in the presentation at the beginning of class. The pre-lab assignments will make up 15% of your final grade. **Late pre-lab or pre-lab assignments will not be accepted.**

Lab Reports:
The lab reports make up the bulk of your course grade (70%). Lab reports must be typed in the provided Microsoft Word templates with additional supporting figures or tables embedded in the document and uploaded to Gradescope by 1:00 pm on the following lab day (i.e. 1:00 pm on the next Wednesday or Thursday). In the event of technical difficulties email your lab report to the teaching staff as an attachment. **Late lab reports and handwritten lab reports will not be accepted.**

Final Exam:
The final exam makes up 15% of your grade and will be a comprehensive written test of your ability to make inferences and answer questions from experimental results.

Make-up Labs:
If you are unable to attend one of the lab sessions due to an excused absence, you may arrange with the instructors **in advance** to make the lab up during one of the open slots or by doing 2 labs in one week if you are available for both the Wednesday and Thursday meeting times.

Office hours:
Office hours, noted above, are identical to those for the BIOL 451 lecture course. If you are unable to make it to those times, contact one of the teaching staff to set up an appointment.

Statement of Diversity:
The Department of Biology values the perspectives of individuals from all backgrounds reflecting the diversity of our students. We broadly define diversity to include race, gender identity, national origin, ethnicity, religion, social class, age, sexual orientation, political background, and physical and learning ability. We strive to make this classroom and this department an inclusive space for all students.

Honor Code:
Application of the honor code can be difficult to interpret in a collaborative lab environment. Please ask the instructors if you are uncertain as to what is and is not appropriate. In general, you should work with your lab group to collect and interpret the data but should explain your results and answer questions in your own words. Thus, your tables and graphs might be quite similar among the group but the writing, even as it relates to those graphs and tables, should differ.