Comparative animal physiology
Laboratory syllabus

Purpose of the lab
Laboratory work is an important part of any course in animal physiology. The laboratory exercises are designed to introduce you to some important physiological techniques and explore concepts taught in lecture. You will be given an opportunity towards the end of the semester to use these techniques in an experiment of your own design.

Another aspect of lab work that we want to expose you to in Comparative Animal Physiology is trouble shooting, which is one of the most important skills a scientist learns. Since this is not the aim of most college science laboratories, many of the lab exercises you have done in the past have been specifically designed to be foolproof. Because we are often working with live animals or preparations, it is virtually impossible to design foolproof animal physiology labs. This is also why our labs are four hours long.

Structure of the standard labs
All lab exercises for this course are included on our Moodle page. We will occasionally make minor modifications on the day of the lab depending on factors such as equipment, reagent, and animal availability. Please bear with us when these changes occur at the last minute ... in all cases, they cannot be helped. Most of the time you will be working in groups of two, although a few labs will involve groups of four. All standard lab exercises will be preceded by a short introductory lecture and are designed to be completed in one lab period.

Pre-labs:
A few pre-lab questions accompany each lab. With the exception of the first lab, answers to these questions are due at the start of the lab period and must be done individually and typed. I've designed these questions to help start you thinking about the experiment, the physiological process that you will be studying, and the results that you expect to obtain. Reading appropriate sections of the text will help tremendously in the theory underlying each experiment and you will get much more out of the lab work if you have a solid understanding of what you're doing. Pre-labs are worth 5 points each. Some labs will also ask for a pre-lab flow chart of the experiment as a way to ensure that you are prepared for the day's festivities.

Post-labs:
Standard labs have short Post-labs associated with them. Each post-lab is slightly different and is described at the end of each lab exercise. Post-labs are worth 10 points each. Unless otherwise stated, these will be due at the start of your next lab period.

Independent projects:
You will have the opportunity halfway through the semester to design and execute a study that you and your research partner have designed. In designing your independent project, we encourage you to integrate and expand upon techniques you learned during the standard lab exercises, although you can also use a new technique if it is practical and informative. This is a time to further investigate physiological phenomena that peaked your interest or apply techniques that you found particularly enjoyable. Please see the "Independent Projects" description for more detail.

Lab notebooks:
Everyone must have an individual lab notebook. Although there are no specific requirements as to the type or what goes in it, one of our goals in this course is to refine and expand your laboratory skills. One key element of "good science" is the ability to keep a clear, up-to-date research notebook. The relatively small class size makes Comparative Animal Physiology an ideal course for developing the ability to keep a good, thorough laboratory notebook.
**Research Papers**

Each student must submit 2 written research papers, one on a standard lab and one on your independent project. Each paper includes some kind of revision. The specifics for these papers vary and are outlined in the "Writing Assignments" handout. Late papers will be accepted at a penalty of 20% off the original value. Completion of both papers is required for a passing grade in this class.

**Oral Presentations**

At the end of the term, all lab groups are required to give a short oral presentation of their independent research project. Unlike talks given at formal meetings, all members of each group will be involved in the actual presentation. Visual aids (slides or overheads) and an abstract are required. Please see "Oral Presentations" description for more details.

**Lab make-ups**

All labs are required. Completion of all labs is necessary for a passing grade in this class. This requirement may be waived if there is a family or medical emergency, proof of which may be required. Because labs are designed specifically for 8 people and constrained by equipment availability no switching of lab sections will be allowed except in the case of a family or medical emergency. If you must miss a lab, you may make it up in any of the other lab sections, including those run by the other Animal Physiology. It is your responsibility to clear any changes with the professors in advance (atullis@pugetsound.edu, x2857; Megan Schwartz mschwartz@pugetsound.edu, x8822).

**Schedule of lab sections**

Section Instructor Day Time
334AA Tullis Monday 1 - 5 PM
334AB Tullis Tuesday 1 - 5 PM
334BA Schwartz Wednesday 1 - 5 PM
334BB Schwartz Thursday 1 - 5 PM