Objectives:
Biology 334 is an upper level course designed to:
• teach basic principles of animal physiology
• promote good laboratory skills and teach aspects of physiological experimentation
• promote intellectual and laboratory independence
• refine data analysis and scientific writing skills

Upon completion of this course, you should have acquired:
• an understanding of basic principles in animal physiology,
• the ability to apply these principles to understand novel situations,
• the basic tools necessary for writing a solid biological research paper,
• many skills necessary to perform laboratory experiments in animal physiology

Required Texts:
• Any edition of one of the following writing handbooks
  • A short guide to writing about biology, by Pechenik
  • A Student Handbook for Writing in Biology, by Knisely

Course Moodle Page:
The course Web/Moodle page can be accessed through the UPS Moodle page http://moodle.pugetsound.edu/moodle/. Our site contains essential material for both lecture and lab, including lecture slides, laboratory exercises, exam study materials, worksheets, and outside readings.
• To save paper and for a faster turnaround time, you will be turning in most assignments through Moodle. IMPORTANT: Unless otherwise stated, I will only accept Microsoft Word files for written work and Excel files for data. If I cannot open your file or if there is something wrong with it such that I cannot read it after I open it then I may consider the assignment not turned in.

Lectures: MWF 9:00-9:50 AM in Thompson 171
Class sessions are primarily an interactive lecture format, with some class discussion. In some cases you will be asked to do specific problems or other short assignments prior to coming to lecture. Although these assignments may not be collected they are important for keeping up with the lecture and may be considered when evaluating your class participation.
• The lecture schedule lists pages in your text associated with each lecture. Read these pages before lecture; it will enable you to get more out of the lecture and will help you answer questions when called upon. Re-read the associated pages after lecture, focusing on the material covered in lecture.
Exams:
There will be two mid-term exams and one final exam. IMPORTANT: To ensure that you are not rushed when you take the mid-terms, they will be given in the evening from 5:30 – 7:30 PM on the scheduled day*. Please make arrangement now to reserve those times. Lectures on those days will be devoted to last minute questions on exam material. Exams will primarily cover lecture material.
IMPORTANT: Make-up exams will not be given but adequate consideration may be given and adjustments may be made if there is a medical or family related emergency. Written documentation of the nature of the emergency may be required. Mid-term exams cannot be taken early. The final exam will be given on Monday December 10th from 8-11am. As per university policy, the final exam must be taken during this time.
* If the entire class can agree on another 2 hr block of time that works for everyone, I’m open to changing this.

Laboratories: Harned Hall 235
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. 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.

Labs are scheduled for 4 hours (please do not ask if you will get out early). Laboratory investigations during weeks 1 - 7 will be structured labs. Weeks 9 – 14 will be devoted to independent laboratory research, data and statistical analysis, and interpretation of results. All laboratory exercises are available on Moodle.

Laboratory Conduct
- As per department policy
  o there is to be no food or drink in the lab room. There will be a place to put these items outside of the lab room.
  o Students must wear long pants and closed shoes.
  o Some labs will require eye protection.
- Animals must be treated with care and respect. It is a privilege to be able to work with them. Any instance of animal abuse will lead to a failing grade in this course.

Structure of the standard labs
All lab exercises for this course will be available on Moodle. 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: Pre-labs are due through Moodle by the start of your lab period, and each student must complete their own pre-lab. I’ve designed these questions to help prepare you for the experiment. Reading appropriate sections of the text will help you understand the physiological processes we are studying in each experiment.
- Post-labs: Standard labs have Post-labs associated with them. Each post-lab is slightly different and is described at the end of each lab exercise. Unless otherwise stated, these will be due by the start of your next lab period through Moodle.
- Lab notebook: Everyone must have an individual lab notebook, the type is up to you. The quality of your lab notes directly influences your ability to analyze your data and, thus, indirectly influences the quality of your post-labs and research papers. Because I
feel so strongly that good notes are a major key to good science there may (or may not) be surprise checks on your lab notes.

- **Lab preparation and performance**: Throughout the term I will be assessing your lab preparation and performance. It is usually readily apparent if a student has not prepared adequately for lab because performance will be suboptimal.

**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 (more info on the "Independent Projects" handout).

**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. Completion of both papers is required for a passing grade in this class.

**Lab make-ups**

All labs are required and missed labs may result in a lower final course grade unless 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 professor (Sue Hannaford, shannaford@pugetsound.edu). It is your responsibility to clear any changes with the professors in advance. Due to the time involved in setting up each lab, you will only be able to make up labs during the same week that your missed lab exercise is scheduled – no exceptions.

**Schedule of lab sections**

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Day</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tullis</td>
<td>Monday</td>
<td>12 - 4 PM</td>
</tr>
<tr>
<td>Tullis</td>
<td>Monday</td>
<td>5 - 9 PM</td>
</tr>
<tr>
<td>Hannaford</td>
<td>Tuesday</td>
<td>1 - 5 PM</td>
</tr>
<tr>
<td>Hannaford</td>
<td>Wednesday</td>
<td>1 - 5 PM</td>
</tr>
</tbody>
</table>

**GENERAL COURSE POLICIES**

**Cell Phones & Computers**

- Please put cell phones on vibrate and in your bags during lecture and lab. If I see a phone on the desk, I will ask you to put it away. Repeated violations of this policy will be noted.
- I don’t mind if you use your computers during lecture to take notes, but please sit in the back row so as not to distract other students. Using computers for other reasons during lecture will be noted and you will be asked to stop.

**Late Policy:**

Unless otherwise stated, assignments are due at the start of lecture or lab as indicated on the individual assignments and in the lecture schedule. Turning in an assignment late will reduce the maximum credit available by 10% per day, including weekend days. Work turned in late on the same day that it is due will be considered ½ day late and 5% of the points possible will be
deducted from your earned grade. Late assignments will not be accepted (a) after 7 days past the due date, and/or (b) if not turned in with enough time to be evaluated before a follow up assignment is due, and/or (c) after 5pm on the last day of reading period. TO BE FAIR TO ALL STUDENTS, THIS LATE POLICY WILL BE STRICTLY ENFORCED. I may waive the late penalty only if there is a medical or family related emergency. Written documentation of the nature of the emergency may be required.

No assignments will be accepted after midnight on the last day of reading period.

**Sports Related Absences:**
If you are going to miss an exam or laboratory due to an athletic event, please inform me AT LEAST ONE WEEK before that date. If you need to make up a laboratory in another section it is your responsibility to make prior arrangements with me and the other Animal Physiology professor. As stated earlier, no make up exams will be given. However, it is possible that arrangements can be made with your coach so that you can take the exam. Due dates will not be adjusted due to an athletic-related absence so plan ahead.

In keeping with university policy, athletic practices are not excuses for missing or coming late to class or labs. Coming late or leaving early from lab or lecture due to sports-related events may result in a lower class participation grade.

**Official Classroom Emergency Response Guidance**
Please review university emergency preparedness and response procedures posted at www.pugetsound.edu/emergency/ [http://www.pugetsound.edu/emergency/](http://www.pugetsound.edu/emergency/) . There is a link on the university home page. Familiarize yourself with hall exit doors and the designated gathering area for your class and laboratory buildings.

If building evacuation becomes necessary (e.g. earthquake), meet your instructor at the designated gathering area so she/he can account for your presence. Then wait for further instructions. Do not return to the building or classroom until advised by a university emergency response representative.

If confronted by an act of violence, be prepared to make quick decisions to protect your safety. Flee the area by running away from the source of danger if you can safely do so. If this is not possible, shelter in place by securing classroom or lab doors and windows, closing blinds, and turning off room lights. Stay low, away from doors and windows, and as close to the interior hallway walls as possible. Wait for further instructions.

**University Policy on Academic Accommodations**
If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Peggy Perno, Director of the Office of Accessibility and Accommodation, 105 Howarth, 253-879-3399. She will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

**Academic Integrity and Plagiarism**
Several forms of academic misconduct are especially relevant to this class and deserve highlighting:
- Cheating on exams or quizzes.
- Alteration, fabrication or misrepresentation of data.
- Plagiarism on *any assignment*, including lab exercises. This includes written work and laboratory drawings.

The following pages on the Puget Sound web site are your sources for information on Academic Integrity:
- **What constitutes plagiarism?** Every semester I have had to deal with incidences of student plagiarism. In almost all cases, the student stated that they did not know that they plagiarized. *To help prevent you from accidently plagiarizing during this and other classes, you are all*
required to study the information about plagiarism on the Collins Library web site and take the Academic Integrity Quiz associated with this page (link on the right side of the page).

- I am obligated to report any incident of academic dishonesty. Any penalty applied with respect to this course will depend on the severity of the violation. Again, it is your responsibility to make sure that you understand this issue. Please ask me if you have any questions.

When you sign the Student Contract for this course, you are stating that you have read the information on this page and that you fully understand what constitutes plagiarism and what the penalties for violations of academic integrity.

<table>
<thead>
<tr>
<th>Grading (subject to slight changes):</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterms (2 x 100 pts)</td>
<td>200</td>
</tr>
<tr>
<td>Final</td>
<td>200</td>
</tr>
<tr>
<td>Graded homework assignments (approx.)</td>
<td>35</td>
</tr>
<tr>
<td>Lab research paper: first submission</td>
<td>40</td>
</tr>
<tr>
<td>Lab research paper: revision</td>
<td>20</td>
</tr>
<tr>
<td>Summary of primary references #1</td>
<td>10</td>
</tr>
<tr>
<td>Summary of primary references #2</td>
<td>10</td>
</tr>
<tr>
<td>Introduction &amp; Methods Draft for Independent Project Paper</td>
<td>10</td>
</tr>
<tr>
<td>Peer reviews of Intro. &amp; Methods</td>
<td>10</td>
</tr>
<tr>
<td>Final Independent Project Research Paper</td>
<td>100</td>
</tr>
<tr>
<td>Pre-labs (5 @ 5 pts each)</td>
<td>25</td>
</tr>
<tr>
<td>Post-labs (5 @ 10 pts each)</td>
<td>50</td>
</tr>
<tr>
<td>Lecture preparation and participation*</td>
<td>15</td>
</tr>
<tr>
<td>Lab preparation and performance**</td>
<td>15</td>
</tr>
<tr>
<td>TOTAL</td>
<td>740 pts</td>
</tr>
</tbody>
</table>

* This category refers to your apparent preparation and participation in lecture. I will assess your performance in this area by taking into consideration your attendance, the extent to which you prepare by doing the assigned readings and assignments (even those that are not graded), and how readily you participate during lecture.

** I will assess your lab preparation and performance during every lab session by observing your level of preparation and how directed and independently you work during lab. I will also be observing how thoughtfully you treat the lab animals and how clean you leave the lab space.
Please sign the contract and return it to your professor by Friday, August 31st. Signed contracts are required to receive grades in this course.

I have carefully read the syllabus and know the correct answers to all of the questions on the Course Self-Test. I understand the content of the syllabus.

- I am aware of the term exam and final exam dates and that the term exams will be given in a 2-hour block of time outside of the regularly schedule lecture time.
- I understand that no make-up or early exams will be given.
- I am aware of the assignments, and I understand that assignments are due on the date and time stated. I understand that preparation assignments are not accepted late and that there is a penalty for any other assignment turned in late.
- I understand that labs are mandatory and that failure to attend lab for something other than a documented medical or family emergency may lead to a lower final course grade.

I have read the University’s policy on violations of academic integrity and the penalties associated with such violations.

- I understand these policies and penalties.

I have read the material about academic integrity and plagiarism contained on the Collin’s Library website as outlined in the syllabus.

- I have taken the Academic Integrity Quiz associated with the Library’s web page on Academic Integrity.
- I understand what constitutes plagiarism.
- I pledge to refrain from any act of academic dishonesty, plagiarism or scientific misconduct.
- I understand that all written work must be completed individually by me unless the assignment specifically states otherwise. I understand that if I violate this policy, penalties will be applied.

NAME (PRINT) ________________________________________________

SIGNATURE ________________________________________________

DATE _________________________