GENERAL PHYSIOLOGY LAB (TS 29)  
SPRING 2009  
BIO 370  

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Office Hours: MWF 10:30 to noon; MWF 1 to 2 pm; and by appointment

Required Materials  
3 ring binder to serve as laboratory notebook, which contains:  
- all laboratory handouts  
- all data, neatly recorded  
- laboratory write-ups  
- 2 formal lab reports  
- quizzes  
- lab safety sheet

Why do you have a physiology laboratory? The purpose of a physiology lab is to illustrate some of the concepts being presented in the lecture. For example, in the lecture and the lab we will study the physiological functions of the digestive tract, osmotic and salt balance and excitable tissues. In the lab, we will be using live material from cockroaches, worms to frogs as preparations. From this experience, you will practice important physiology lab skills as well as gain a stronger conceptual understanding of the lecture material.

Laboratory handouts will be given out 1 week before the lab - don't lose them – place immediately in your notebook (3 ring binder)!!

Grading Policy  
Your lab grade will contribute to 30% of your course grade. Your grade for the lab component of this course will be based on my evaluation of the following: 1) weekly lab quizzes at the beginning of each lab, 2) weekly lab reports and homework questions (see more information below), 3) two notebook evaluations, 4) two formal lab reports (see more information below) and 5) lab participation.

<table>
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<th>% of lab grade</th>
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| Lab Quizzes (weekly)   | 15%  
| Weekly lab reports and homework questions | 25%  
| Two lab notebook evaluations | 20%  
| Two formal lab reports | 30%  
| Lab participation      | 10%  

Attendance policy  
Your participation grade is based on your ability to promptly attend and actively participate in every lab. Be prepared for lab and bring all necessary materials such as your laboratory handouts and homework assignments. Lab handouts will available from your instructor as a hard copy or as an electronic copy from web site. It is each student’s responsibility to web site (when instructed) to download necessary materials. You must come to lab on time to be able to take the lab quiz each week. If you are late, you receive a 0 for the lab quiz. Missed labs cannot be made up. If you know in advance that you will miss a lab, please contact me immediately to discuss possible arrangements. If you miss a lab for any reason, contact me within 24 hours. Students who miss lab without prior consent by me will lose 20% of your overall lab grade, two missed labs will result in the lose another 20% of your overall lab grade and three missed labs result in automatic failure of the entire course.
**Assistance and accommodations**

Students who need additional help with the course should see their professor as soon as possible. Do NOT wait till the end of the semester. Another source of help for students is the Academic Support Center (http://www.assumption.edu/acad/ASC/default.html). Students can visit the ASC on the second floor of the D’Alzon Library, or call the center at 508-767-7099, x5232.

Assumption College is committed to providing equal access to students with disabilities who are able to effectively function in a campus-based liberal arts environment (http://www.assumption.edu/acad/ASC/disabilities.html). If you believe you require accommodations in the lab, inform your instructor as soon as possible. Requests for accommodations must be accompanied by verification from the Director of Disabilities Services, Sharon de Klerk at X7500.

**Academic dishonesty policy**

Throughout the course, all students are expected to adhere to the Student Academic Honesty Policy of the College. This policy is stated in the Academic Honesty Booklet and Student Handbook and at http://www.assumption.edu/gradce/conted/Academic_Honesty.pdf. Violating the Academic Honesty Policy on an exam or assignment will result in a grade of 0% for that work. A second offense will result in an F for the course grade. Claiming ignorance about any component of the Academic Honesty Policy is never a valid excuse for violating the policy.

**Laboratory 3 ring binder & weekly lab reports**

Each student is expected to have a laboratory 3 ring binder in which the results (also all the handouts, notes, assignments, quizzes, lab safety sheet) of all experiments are kept. The binder is to serve as a permanent record of all the experiments completed during the semester. All experiments should be neatly written or typed (preferred) in the binder using the following format below. After each lab, students will write/type a brief lab report (~2 pages of text, not including figures) and answer all homework assignments given with the lab handout. This weekly lab report and homework assignments are collected at the beginning of lab the following week by your instructor and will be graded. Follow the format below for your weekly lab report:

- **Purpose/Introduction**: Should be kept brief (6 to 8 sentences) and answer the question as to why you are doing the lab. What do you expect to learn from the lab?
- **Materials and Methods**: Should be written in complete sentences. Refer to the lab manual and in your own words, briefly mention the equipment used and the techniques employed.
- **Results**: In this section you should compile the raw data in a manner that would be understandable to another science major reading the lab report. The information should be presented in paragraph form. Also, use graphs and tables whenever possible. It is important that each table, graph and figure has an appropriate title, key and caption. See Knisely (which was required for Concepts in Biology course) for details. Each individual must create their own figures and tables (and report).
- **Conclusions**: This section could be named significance. You want to discuss the results you received. What did you expect to have happen? What went wrong? Why? How would you do experiment differently? Were your results consistent with your expectations? If not, why? It is useful to interpret your findings in terms of the whole animal. Why is the physiological function you are studying important for the survival or environmental adaptation of the animal?

**Two Formal Lab Reports**

You will write two formal lab reports during the semester. Formal lab reports need to be submitted in hard copy and as an electronic copy as an email attachment in MS word format.
Title page: The title should be short and informative. Your name and the date should appear on the title page. The title page should be on its own page.

Abstract: This is a short summary of the entire paper and should not be more than 500 words. It should contain a statement of your hypothesis (what it is that you are testing), a brief description of the methods and materials, the results and a general statement of your conclusions.

Introduction: This section should contain enough background information to give the reader an understanding of the significance of the experiment. It should state your hypothesis and provide the information upon which you base your hypothesis.

Materials and Methods: You should describe in detail the methods and materials used for the lab in more detail than your weekly lab reports. It is not necessary to specify every detail, such as, what type of pipette was used. However, the reader should be able to reproduce the experiment. Do not list materials and methods. This section must be written in complete sentences.

Results: This section should be presented in paragraph form. The results should be written clearly and concisely. Figures and tables are useful. The text of this section is confined to presenting the results and pointing out important aspects of the figures and tables. You should not draw any conclusions about your results in this section.

Figures and Tables: Graphs and tables can help the reader understand the results and make the paper easier for you to write. Each figure or table should have a number (such as Figure 1 or Table I), title and legend. The title should be brief and state what the overall point of the data. The legend should state how the figure or table is organized and what any symbols represent. Figures and tables should NOT be inserted into text. Rather, include them on separate pages at the end of your formal lab report.

Discussion: This is where you make interpretations of your results. The conclusions you make should be based solely upon the data from the results section, including sources of error. The discussion also describes the significance of the experiment in terms of the broader subject. Interrelate the discussion with your introduction.

References: This should include only those works, which you have cited in the text of the paper. There should be a minimum of 3 references from journal articles. All journals cited should be from peer reviewed journals. Several peer reviewed journals are listed below. Ask your instructor if you are unsure if a journal is peer reviewed. A copy of all cited journal articles (in their entirety) must be provided as proof of finding, reading and using the information in your formal report. You may cite textbooks but this does not count towards your minimum of 3 journal article references. Do not use popular press or web pages as references.

Failure to find and use appropriate references will result in a failing grade for that report.

Use the following reference style to receive full credit:

Use only this reference style – everything else will have points deducted.

Journal Articles and Books (IN BOLD). Publisher is not necessary for journal articles!


Baxter DA, Bittner GD. 1981. Intracellular recordings from crustacean motor axons during


Last note about references: References must be properly cited in the text. We will use the method in which the author's name and year of publication is stated in the text of the paper, such as one author (Bittner, 1968), two authors (Bicker and Menzel, 1989), or if more than two authors (Stevenson et al., 1979). Any other journals – get my permission first (check with me if not sure if peer reviewed)!!

Examples of peer-reviewed articles:

Science
Nature
Cell
Cell Biology
Journal of Comparative Physiology
Journal of Experimental Biology
Comparative Physiology and Biochemistry
Biological Bulletin
British Medical Journal

Journal of Physiology
New England Journal of Medicine
Pesticide Biochemistry and Physiology
Journal of Neuroscience
Journal of Neurophysiology
Journal of Chemical Ecology
Journal of Experimental Zoology
Pharmacology Biochemistry and Behavior

LABORATORY RULES

- Smoking is not permitted in the laboratory.
- Absolutely no open shoes, no sandals or flip-flops—no exceptions!!
- Do not borrow equipment from other desks. If you need something, ask!!
- All breakage of apparatus should be reported to the laboratory instructor immediately.
- All animal refuge is to be deposited in receptacles provided for it.
- No solid material should be thrown in the sinks.
- Stock solutions should not be removed from the side shelves.
- Do not contaminate stock solutions. Never put a pipette or other apparatus in the stock bottles. Pour some in a container of your own and take it to your desk. Label everything!!!
- Salt solutions should never be left on metal apparatus. Rinse with tap water and dry.
- Take extreme care with strong acids and poisons.
- Report all accidents to the laboratory instructor.
- If the instructor is not present, report accidents to the main office.
  - You should be familiar with the locations of fire extinguishers, fire exits, eye-wash and all first aid stations
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<tr>
<th>Date</th>
<th>Topic</th>
<th>Materials Due</th>
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<tr>
<td>Jan 20</td>
<td>NO LAB</td>
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<tr>
<td>Jan 27</td>
<td>Introduction to ADInstrument Equipment, metric conversion</td>
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<td>Feb 3</td>
<td>Diffusion, Osmosis and Tonicity Concepts, Osmoregulation (clamworm) and Red Blood Cells (sheep)</td>
<td>Metric conversion worksheet, weekly lab report With chart printouts</td>
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<tr>
<td>Feb 10</td>
<td>Digestive Enzymes (Cockroach)</td>
<td>Osmolarity worksheet, weekly lab report (clamworm), red blood cell worksheet (sheep)</td>
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<td>Feb 17</td>
<td>Blood Chemistry (Human/Animal)</td>
<td>Weekly lab report (digestive enzymes)</td>
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<td>Feb 24</td>
<td>Kidney regulation (computer simulation)</td>
<td>Weekly lab report (blood chemistry)</td>
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<td>Mar 3</td>
<td>Blood pressure, respiration, blood typing (human)</td>
<td>Kidney worksheet and weekly report</td>
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<td>Mar 6</td>
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<td>1&lt;sup&gt;st&lt;/sup&gt; Formal lab report and lab notebooks due by noon in Testa 103</td>
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<td>Mar 10</td>
<td>NO LAB: Spring break</td>
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<td>Mar 17</td>
<td>Neurophysiology and nerve impulses</td>
<td>Weekly lab report (blood pressure, respiration), Blood typing worksheet</td>
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<td>Mar 24</td>
<td>Skeletal muscle physiology</td>
<td>Neurophysiology worksheet (2 different ones) &amp; weekly report</td>
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<td>Mar 31</td>
<td>Cardiovascular physiology</td>
<td>Skeletal muscle physiology worksheet &amp; weekly report</td>
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<td>Apr 7</td>
<td>Smooth Muscle physiology (earthworm)</td>
<td>Cardiovascular physiology worksheet &amp; weekly report</td>
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<td>Apr 14</td>
<td>Electrocardiogram and Exercise physiology (human)</td>
<td>Smooth Muscle worksheet and weekly report</td>
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<td>Apr 21</td>
<td>Sensory physiology (cockroach)</td>
<td>Weekly lab report (Electrocardiogram and Exercise Physiology)</td>
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<td>Apr 28</td>
<td>Sensations and Special Senses (human)</td>
<td>Sensory Physiology Worksheet and weekly lab report</td>
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<td>May 5</td>
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<td>2&lt;sup&gt;nd&lt;/sup&gt; Formal lab report and lab notebooks due by noon in Testa 103</td>
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