**Animal Behaviour Laboratory- Psychology 3S03**

**Location:** Psychology 316, 116  
**Time:** Tuesday 11:30-14:20; January 4 - April 5, 2005  
**Instructor:** Dr. Reuven Dukas (office - PC 104, e-mail: dukas@mcmaster.ca).  
**Teaching Assistants:** Kevin Abbott (abbotkr@mcmaster.ca), Luca Bianco (biancol@mcmaster.ca) (Office - PC 235, phone - 26042).  
**Office Hours:** By appointment.  
**Web page:** [http://psych.mcmaster.ca/dukas/abl.htm](http://psych.mcmaster.ca/dukas/abl.htm)  

**Objectives.** By the end of this course the students will be able to:  
1. Formulate a testable hypothesis.  
2. Design a proper experimental protocol to falsify that hypothesis.  
3. Verify that the protocol has the power to falsify the hypothesis. Critically assess all possible alternatives and include additional treatments, controls, or further experiments if necessary. Design a blind protocol.  
4. Consider issues of sample size, statistical analysis and power.  
5. Consider issues of safety and animal care.  
6. Plan all the necessary hardware and logistics for the experiment.  
7. **Write a research proposal including all the above components.**  
8. Conduct the experiment and record the data.  
9. Analyze the data and draw conclusions.  
10. Discuss the results, suggest weaknesses, alternatives and further experiments.  
11. **Write a research paper that includes all of the above elements.**  
12. **Present a PowerPoint-assisted talk of the research paper.**

**Assumptions** about the students’ prior knowledge: evolution, statistics, animal behaviour, and computer software including Excel. Students should refresh their knowledge if necessary.

**Outline:** The course will consist of two class experiments followed by independent projects carried out and presented by pairs of students. See the schedule.

**Project:** Must be a planned experiment with a sufficient number of individuals of a non-human species and conducted according to the scientific method, academic ethics, and animal-care regulations. Ideas for experiments may be found in animal behavior textbooks and journals, and the following book kept on reserve in Thode library: Ploger BJ, Yasukawa K, 2002. Exploring Animal Behavior in Laboratory and Field (Academic Press.)
**Assignments and grades:** Assignments must be e-mailed to Dr. Dukas by 10 AM of the dates indicated below. All grades will be given in percentages. The final mark will be weighed as noted in the schedule. Late papers will be subjected to a penalty of 10% per day.

**Schedule**

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Class Meeting</th>
<th>Assignments &amp; grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 4</td>
<td>Introduction: preparing, conducting &amp; presenting animal behaviour research</td>
<td>316</td>
<td>Ch. 1-2.</td>
</tr>
<tr>
<td>Jan 11</td>
<td>Tutorial: analysing experimental data</td>
<td>204</td>
<td>Ch. 3-4.</td>
</tr>
<tr>
<td>Jan 18</td>
<td>Experiment 1: Interspecific courtship in fruit flies</td>
<td>116</td>
<td>Ch. 9. Proposal 1 (2.5%)</td>
</tr>
<tr>
<td>Jan 25</td>
<td>Choosing a project &amp; presentation tutorial</td>
<td>316</td>
<td>Ch. 5. Paper 1 (7.5%)</td>
</tr>
<tr>
<td>Feb 1</td>
<td>Experiment 2: mate choice in fruit flies</td>
<td>116</td>
<td>Ch. 8. Proposal 2 (5%)</td>
</tr>
<tr>
<td>Feb 8</td>
<td>Project discussion</td>
<td>316</td>
<td>Paper 2 (10%)</td>
</tr>
<tr>
<td>Feb 15</td>
<td>Proposal presentation</td>
<td>316</td>
<td>Ch. 13. Proposal outline</td>
</tr>
<tr>
<td>Feb 22</td>
<td>Break</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>March 1</td>
<td>Research project</td>
<td>No</td>
<td>Final proposal (15%)</td>
</tr>
<tr>
<td>March 8</td>
<td>Research project</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>March 15</td>
<td>Research project</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>March 22</td>
<td>Research project</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>March 29</td>
<td>Project presentations</td>
<td>316</td>
<td>Project presentation (10%)</td>
</tr>
<tr>
<td>April 5</td>
<td>Hand in project papers</td>
<td>316</td>
<td>Project paper (50%)</td>
</tr>
</tbody>
</table>
Animal Behaviour Laboratory- Psychology 3S03

Checklist for papers Dr. R. Dukas, 2005

- Follow (i) the Checklist in Pechenik pages 211-214, and, (ii) published papers in ANIMAL BEHAVIOUR.
- Submit electronically to Dr. Dukas by the deadline as a single-spaced WORD document.
- Proper file name and format - The file name should be “last-name assignment name.doc”. For example, “Dukas proposal 1.doc”.

**Overall:** Conciseness (scientists HATE fluff). Logical organization, consistent organization throughout the paper, coherence, connection among sentences and paragraphs, spelling, grammar, proper use of words, proper use of subheadings. Structure your Methods, Results and Discussion sections around the key hypotheses presented in the INTRODUCTION. Remember that your paper will be evaluated for quality, not either length or effort.

- **Title**: short and informative.
- Do not include an abstract (to reduce your workload).
- **Introduction**: relevant presentation of issues and references. Note that many relevant references are older papers and books. Do not cite a source unless you have read it. Clearly state your goal and hypotheses.
- **Methods**: include all relevant details that will allow a reader to replicate the study.

**Results.** Follow the order of the Introduction and Methods (e.g., present data pertaining to hypothesis 1, then 2 etc. Present the main findings in proper Figures with clear legends. Avoid tables unless truly justified. Do not include either raw data or trivial calculations (e.g., present the statistical result, not the full calculation of a test). Do not be redundant: if your data are summarized in a Figure, don't present them also in a Table. include basic statistics (e.g. t-test, chi square, or a simple ANOVA); make sure that you use the proper test, and that you understand the statistical results. Use the following format in the RESULTS section: "The enriched males mated twice as much as the standard males (F<sub>1,91</sub>=23.7, P<0.001; Fig. 1). The mating latency was similar with enriched and standard males (1549±47 s vs. 1652±67 s respectively (mean ± 1 SE); F<sub>1,522</sub>=1.6, P=0.21)." Do not discuss in the Results section.

- **Discussion**: state what you found in relation to what you predicted and how you explain it. Discuss weaknesses, ways of resolving them and suggest future research questions and experiments arising from your work.
- **References**: include all the sources that you have read and cited following ANIMAL BEHAVIOUR style.