Measuring Behavior - PSYCH 3PA3
Course Syllabus (pre-final version)

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Office hours: Tuesday afternoons (by appointment via e-mail)
Term 1: September 5 – November 28, 2012
Lectures: Wednesdays 15:30-17:20 (BSB/B154); Tutorials: Fridays 15:30-16:20 (BSB/B154)

Course Description:
“Measuring Behavior” is aimed at undergraduate psychology students who are about to embark upon experimental and clinical studies of behavior. This course covers basic principles and methods of quantitative behavioral analysis, with an emphasis on techniques of observation, recording, and inferential statistics. Moreover, it provides theoretical framework for further, direct involvement in behavioral experiments related to biomedical and social sciences. A didactic, multimedia-rich approach will be combined with thematic discussions from selected scientific literature. To facilitate the learning process, we will also review animal and human studies that employ different methods in behavioral analysis. We will test our knowledge by discussing methodological approaches and implications of these studies for better understanding of behavior in health and disease.

Course Objectives:
By the end of this course students should be able to,
- recognize general principles of measuring behavior in experimental animals;
- develop awareness about the complexities of data collection and the interpretation of behavioral results.
- design behavioral methodologies, understand research terminology and become acquainted with equipment and software packages required for collection, analysis, and presentation of behavioral results.
- develop presentation skills using the PowerPoint software.

Textbooks used in the course preparation (not mandatory):
Additional readings:


Course Format
A significant portion of the material will be presented in a didactic manner. However, the course format is designed to facilitate self-directed learning, critical thinking, and independent inquiry. Therefore, the lectures will be interactive; the instructor will ask you questions related to a given topic and encourage you to ask questions. Similar to students, the instructor may not be able to answer a question posed during the lecture. In those cases, he will take it as a challenge to have an answer for the next session.

Students are responsible for collecting the material presented in lecture and in tutorial sessions. Tutorials will be used to supplement lectures and to provide more detailed examples, problems and demonstrations of relevant course material.
Measuring Behavior (PSYCH 3PA3) - Fall 2012

<table>
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<tr>
<th>List of Topics</th>
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<td><strong>Week 1.</strong> Why measure behavior? Ethical and other considerations when using animals in experimental psychology and psychiatry</td>
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<td><strong>Week 2.</strong> Origin and choice of animal subjects, types of measures, and levels of measurement in behavioral studies</td>
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<td><strong>Week 3.</strong> Laboratory mouse: feeding / drinking, sleep, and reproductive behaviors</td>
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<td><strong>Week 4.</strong> Assessments of reflexes, pain threshold, and sensorimotor capacity</td>
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<td><strong>Week 5.</strong> Assessments of emotional reactivity and motivated behavior</td>
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<td><strong>Week 6.</strong> Assessments of learning and memory</td>
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<td><strong>Week 7.</strong> Essay 1 due and Mutual Feedback</td>
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<td><strong>Week 8.</strong> Computerized monitoring of spontaneous behavior in home-cage setting</td>
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<td><strong>Week 9.</strong> Fever, neuroinflammation, and sickness behavior</td>
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<td><strong>Week 10.</strong> Defining a research question or hypothesis, selection of behavioral tests, design of a pilot study, effect size, and sample size estimates</td>
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<td><strong>Week 11.</strong> Data/tissue collection, statistical analysis, graphing and interpretation of behavioral results</td>
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<td><strong>Week 12.</strong> Advanced procedures in studies of brain and behavior: T-pattern analysis, telemetry, intracerebroventricular cannulation</td>
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<td><strong>Week 13.</strong> Essay 2 due and Final Exam</td>
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**Evaluation:** The course will focus on promoting creative thinking and curiosity required for measuring normal and aberrant behavior. In early September, students will receive two behavioral reports, which will constitute the topic for writing two take-home essays. The essays aim to develop the students’ analytical skills in the context of experimental design, methodology used, and interpretation of behavioral results. The first essay will be due October 17th and focuses on critical analysis of behavioral measures and paradigms. The second essay will be due November 28th and will address issues relating to analysis and interpretation of behavioral results. The final written examination will consist of short answer questions related to course material and will be written on November 30th. The use of calculators, books, and notes is prohibited during the final exam; a pencil and eraser are all that will be required.

*The final mark will consist of:*

- 35% - Lecture attendance and participation in Tutorials
- 20% - Essay 1
- 20% - Essay 2
- 25% - Final Exam

**Note:** “Bonus points” (max. 12%) can be collected by participating in a weekly “Jeopardy” quiz.
**Essay Format:** Critical feedback to key aspects of a paper selected is expected in each essay. These aspects are as follows:

1. What was the working hypothesis, or research question? Was this a legitimate research question, with clear implications to human disease or better understanding of brain function?

2. Who were the subjects and what behavioural measures were selected? Why were these subjects selected and, if other behavioural measures were employed, would they further contribute to a deeper understanding of behavioural phenomena studied?

3. How were behavioural tests performed? Are there better alternatives?

4. What inference was drawn from the results obtained? Are there alternative interpretations and if so, what type of evidence is needed to corroborate alternative explanations and generate additional hypothesis?

(For a description of how to critically analyze scientific papers please check this link: [http://www.science.mcmaster.ca/biopharm/images/files/undergraduate/critanal.pdf](http://www.science.mcmaster.ca/biopharm/images/files/undergraduate/critanal.pdf)).

In brief, the essay should be divided into self-contained sections, with the headings **Hypothesis, Subjects, Methods, and Results**. To have a better grasp of experimental design, students are encouraged to present the study visually, either as a diagram, flow chart, or figure. An abstract of the essay must also be submitted and should contain a maximum of 250 words. The APA format should be used for in-text citations and bibliography (e.g., see the McMaster library [http://library.mcmaster.ca/guides/apa.htm](http://library.mcmaster.ca/guides/apa.htm)). The word limit for the body of the essay is 1500-2100 words, which does not include the abstract, bibliography, or figures/diagrams. Word processor software should be used to determine word count (to be posted on title page). Penalty for exceeding word limit is 5% per each 100 words or less; that is, 5% for 1-100 words, 10% for 101-200 words, etc. This penalty is applied to the final essay grade; e.g., if essay was graded as 82%, a 5% penalty would reduce the essay mark to 77%. Print format for the essay is double spaced, 1" margins all around, pages numbered, and 12-point font. The Title Page should contain:

- Title of the essay and number
- Course number and name
- Student’s name and ID
- Date
- Word count

**Characteristics of a Good Essay**
These include: correct use of grammar and syntax; organization; clear, lucid and concise exposition of ideas (i.e. meaningful sentences); no repetitions, redundancies, or irrelevant details; logical flow of arguments (links are stated explicitly and make sense); literature review that demonstrates critical and imaginative reading (look at pro and con; proposal of own alternatives). The style, grammar, ease of reading, and tightness of logic will influence the

McMaster's Grading Scale

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The instructor reserves the right to adjust the final marks up or down, on an individual basis, in the light of special circumstances and/or the individual's overall performance in the course.

Dates and deadlines: The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with an explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email regularly during the term and to note any changes.

Late assignments: Assignments submitted beyond the deadline will not be accepted unless prior arrangements have been made with the instructor.

Makeup Exams: If a student misses an exam, she/he will need to have a valid reason and be able to document this excuse in order to qualify for a makeup examination. Examples of legitimate excuses include sickness, religious holiday, and conflict with another McMaster University academic or sporting event. If a student skips an exam, hoping that an eventual excuse will become acceptable, she/he will receive a zero for that exam. Psych 3PA3 does not subscribe to proposals for “extra work” in mitigation of exam delinquencies. Except in the case of illness, a makeup exam will not be given unless arrangements are made with the course Instructor in advance of the regularly scheduled examination. In the case of minor medical illness lasting fewer than five days, student must report the illness using the McMaster Student Absence Form (MSAF) and contact the course instructor within 2 working days of the missed exam in order to qualify for a makeup exam. Note that the MSAF may only be used once per term and may not be used for the final exam. In the case of major medical illness, the student must submit a medical note to the Faculty office within 5 working days of the missed exam in order to qualify for a makeup exam.

E-mail: All students should have McMaster e-mail accounts. If another e-mail address is preferred, we will try to accommodate your request, but we cannot be responsible for the non-receipt of messages to students using non-McMaster e-mail addresses. Neither can the instructors be responsible for returning long distance calls from students. Any student wishing to reach an instructor should use e-mail.

Seeking Help: Students are encouraged to ask the course Instructor for help at any time if needed.
The following policies are necessary in order to be fair and equitable to all students:

Audio and Video Recordings: The recording of lectures and exams (video or audio) is prohibited.

Attendance: Because the majority of the course will be based on discussion and presentations compiled from different readings, students should attend all classes and tutorials. If late, a student should not disrupt and/or disturb other students who arrived earlier and are already seated. Talking during lecture or tutorials, and related disturbing behaviour, is inconsiderate and will not be tolerated. Students are not expected to schedule any travels during lectures, tutorials or exams.

Readings: Students are expected to go beyond the memorization of facts in order to display an understanding of the material. They are also strongly encouraged to read the relevant text chapters and review articles after the lecture/tutorial devoted to that topic. The follow-up readings will help students to recall, synthesize and consolidate the material that was presented.

Notes: It is essential that students attend classes and develop proper note-taking skills. If lecture/tutorial is missed, it is the student’s responsibility to obtain the notes on this material from a classmate. Most of the material discussed in class can be found in the textbooks or by searching the web, albeit presented from a different perspective. Slides shown in class will not be posted on the web because of copyright restrictions. To consolidate their knowledge, students are encouraged to search the web to obtain additional information and/or pictures pertinent to a particular topic.

Academic Dishonesty Policy Reminder: Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences, e.g., the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university. It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at http://www.mcmaster.ca/academicintegrity.

The following illustrates (but it is not limited to) three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one’s own or for which other credit has been obtained;
2. Improper collaboration in group work;
3. Copying or using unauthorized aids in tests and examinations.

Logistics: McMaster University reserves the right to change course dates, assignments and their grading weights, and deadlines in case of an emergency, labor disruption, civil unrest/disobedience, etc.
Important Dates

14 September 2012 (Friday): Last day for registration and adding or dropping courses; Assignment of two essays

17 October 2012 (Wednesday): Essay I due

19 October 2012 (Friday): Feedback from the instructor

16 November 2012 (Friday): Last Day for cancelling the course without academic penalty

28 November 2012 (Wednesday): Essay II due

30 November 2012 (Friday): Final Examination (date & time scheduled by the Office of the Registrar)