Psychology 3LL3: General Experimental Laboratory

Website: http://www.science.mcmaster.ca/Psychology/psych3LL3mw/
“Watch here for updates!”

When? Tuesdays 11.30-14.20
Where? Psychology building, Room 335 & Burke Science 248

Instructor: Margo Wilson, ext 23033 (wilson@mcmaster.ca)
Office hours: To be arranged.

Teaching Assistants:
   Meredith Young youngme2@mcmaster.ca
   Julie Marentette
   Trent Toulouse
Office hours: TBA and by appointment

Course description and objectives
Everyday we read and hear of new (and sometimes astonishing) scientific discoveries, but it is not always easy to distinguish the misguided (and even fraudulent) from the plausible. The credibility of a scientific discovery is affected by numerous factors including the repeatability of the findings, the ecological and psychological validity of the measures, the methods, and the scientists’ interpretations. In this course, you will have the opportunity to critically evaluate research, to develop testable hypotheses, to make decisions about appropriate subjects and methods to test particular hypotheses, to address ethical matters, and to interpret research findings. There will be demonstration experiments as well as original data collection in class. We will all participate as researchers and as anonymous subjects so that we’ll have the data to analyze and interpret. You will also have opportunities to engage in collaborative research and to master skills appropriate to a fundable research proposal, a scientific report in a peer-reviewed journal, and a research talk.

Course content
A variety of studies in psychology will be presented to illustrate the hallmarks of scientific research. We will discuss the strengths and weaknesses of the hypotheses, methods, and interpretations. Everyone will participate as both scientist and research volunteer. In order to consolidate the development of your research skills you will write a research proposal, conduct an experiment to test a particular hypothesis, complete an ethics application, and write a scientific report. People will work as small research teams in the collection of primary data to test their hypotheses, but all team members will write their own proposal and scientific report. Each research team will present their findings to the class as a research talk. Each member of the team will submit an ethics review application for each study to the instructor.

Coordination of team projects and the exchange of information will be facilitated through the course folder on Learn Link (www.learnlink.mcmaster.ca) to which all registered students have access. If you are unfamiliar with this program there is help information at the Learn Link site.

Assignments and grading apportionment
1. 5%: Class attendance (medical excuses permitted).
2. 30%: Three in-class quizzes on readings for class research “demos”: 3 tests worth 10% each.
3. 10%: Research Results: analysis of a data set provided by the instructor and summary report of the findings.
4. 20%: Individual research proposal for team project.
5.  5%: Ethics review application by each individual for team project.
6. 10%: Team research talk (mark for team applied to each team member).
7. 20%: Individual written scientific report of your team research project.

**Note:** Written assignments (research proposal, ethics application, scientific report) will be submitted electronically to the instructor by 5pm on the due dates. Instructor’s email is Wilson@mcmaster.ca.

**Form of the In-class Quiz**
Each of the three tests will be based on in-class lectures and presentations plus assigned readings for the demos of published studies. 30 minutes of class-time will be devoted to each quiz. The format may include multiple choice items, short answer, and essay questions.

**Form of the research proposal**
Research proposals are submitted to granting agencies for funding of the planned projects and so the goal is to persuade the decision-makers of the merit and feasibility of the projects. The proposal includes the specific goals of the projects, the rationale for the hypotheses or questions, a review of the relevant literature, a description of the methods and research volunteers, the nature of the dependent measures and how the data will be analyzed, what are the anticipated findings, and how will they be interpreted. Even if funding is not needed, research proposals are useful in planning the experiments, organizing the relevant literature, and clarifying the rationale for the particular hypothesis or question. Your research proposal will be useful in planning your project and in writing your final research report.

Here are some links to “how to write a research proposal”
http://www.mcmaster.ca/ors/guide/guide_proposal.htm
http://www.nserc-crsng.gc.ca/programs/winprop_e.htm
http://www.queensu.ca/vpr/keepnserc.htm

The research proposal proper will be limited to **four double-spaced pages or less than 900 words using a 12 pt font**; more pages than this limit will not be read. References, title page, and any appendices, tables or figures can be extra.

**Team Research Talk**
The group project will entail each group giving a brief (20 minute) talk to the class. Group members participate equally in the presentations and everyone receives the same mark. A research talk gives you an opportunity to communicate the purpose of your study, the methodology, your findings and interpretations, but also entails additional skills. Coordinating the equal participation of all group members is challenging. And, you need to keep the audience’s attention and interest. The research talks will aid you in the completion of your research paper.

**Form of the scientific report (reportwriting2006.pdf)**
Each person will write a scientific research paper describing the group project. The data compiled by all members of the group will form the basis of your report. The individual papers within each group will only be similar with respect to the methods and the findings. The papers will vary among group members as people will vary with respect to their introduction to the research project, in their interpretations of the findings, in their criticisms of the study, in their suggestions for future work, in their selection of relevant literature, and in their styles and points of view.

Here are some links to writing scientific reports:
http://www.psywww.com/tipsheet/labrep.htm
http://www.psych.upenn.edu/~baron/labrep.html

Your final scientific report, like your research proposal, will be limited to **four double-spaced pages using a 12 pt font**. This limit does not include title page, references, figures and tables. 


short report like this is challenging to write as you need to include your introduction, methods, results and discussion sections; however, a succinct report is usually better understood than a long one with irrelevant information and ideas. This kind of short report is the style of many scientific journals such as Science, Nature, Psychological Science.

Please note: All written reports and papers submitted for marking by instructor must be formatted as typed double-spaced lines using a 12-point font. All reports must be submitted electronically.

Details re ethics application
In any research program the investigator is concerned with the ethical treatment of the research participants. There are federal standards for assuring that the people are treated with dignity and sensitivity, and not subject to undue distress. Like all researchers in Canada, you will prepare an ethics application as if it were being submitted to an ethics review panel.

Research conducted by undergraduates in psychology courses must be approved by the Psychology student research ethics committee (PSREC). Here is the link for the relevant form to be completed: PSREC application.

Team research projects
People will form teams to plan and carry out a research project. This will entail a big commitment of effort and will constitute 55% of your grade for this course (20% for the research proposal + 5% for ethics application + 10% for talk presentation of research project + 20% for final written scientific report).

The instructor will offer several possible research topics and methods that are feasible to do in this course (see below: “Topics for team research projects”). As a team you will plan the project including the research question or hypothesis you wish to address and the methodology. The research volunteers will be other members of our lab course who will be naïve with respect to the particular hypothesis and experimental design, but of course they must be given sufficient information to make an informed decision as to whether they wish to participate. There is no penalty for not participating; they will instead complete a “walk through” of the methodology but no data will be collected. All data will be anonymous. Data will be collected during class time.

Topics for Team Research Projects
In discussion with the instructor, the planning and execution of the research projects will be done by team members. The projects may be variants of the demonstration studies offered by the instructor, or they may address any of the topics listed below. The instructor will provide each team with one or two published papers to serve as a guide to the relevant literature and methodology. The instructor is able to provide relevant software for some computer interactive tasks or other methodological materials.


Readings
There is no textbook required for this course, but you will be required to read primary research literature. These readings will include those provided by the instructor and those relevant to the research projects.

Reference Reading:
<table>
<thead>
<tr>
<th>Date &amp; Place</th>
<th>Assignments</th>
<th>Topic</th>
<th>Demo No.</th>
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<tbody>
<tr>
<td>Sept 12 Psy 335</td>
<td></td>
<td>Overview of the course. What are the hallmarks of an experiment? What are the strengths and weaknesses of experiments? What alternatives to experiments have scientific value?</td>
<td>One</td>
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<tr>
<td>Sept 19 BSB248</td>
<td>Quiz 1 (10%)</td>
<td>Experimental designs: How do we decide what kind of experimental design is best for the particular hypothesis? What are our options? Independent/between groups design or repeated measures design. Why do we need to decide on the appropriate kind of statistical analyses we'll use when designing an experiment? Will the research participants be assigned randomly to the experimental conditions or will it be better to use &quot;matched&quot; controls?</td>
<td>Two</td>
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<tr>
<td>Sept 26 BSB248</td>
<td>Quiz 2 (10%)</td>
<td>Our measures: independent and dependent variables and their intimate relationship. Reliability &amp; validity of measures. Analyzing Data and Reporting Results. The particular statistical tests and portrayal of the data will largely have been decided when the experiment was initially designed. The statistical tests will differ for parametric or non-parametric data. A reader of your study will want to know some descriptive statistics like means and standard deviation (or counts and percentages), as well as the results of statistical tests such as t-test, ANOVA, and Chi Square.</td>
<td>Statistics workshop</td>
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<td>Oct 3 Psy335</td>
<td>Results: Data analysis &amp; summary of findings due (15%)</td>
<td>Choosing the best subjects for the research goals. Unbiased recruiting of subjects. Generalizability of the findings to the intended population. Sample size. Ethical consideration of the participants: Risk/benefit ratio; informed consent; anonymity &amp; confidentiality.</td>
<td>PSREC presentation</td>
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<td>Oct 10 Psy335</td>
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<td>Interpreting research findings: What do the authors claim they have demonstrated? Is their hypothesis confirmed? How do the findings fit into existing knowledge and theory? What are the strengths and weaknesses of their methodology? What would be a next step in this line of research?</td>
<td>Three</td>
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<td>Oct 17 Quiz 3 (10%)</td>
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<td>Framing effects: when you want to use a</td>
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<td>Date</td>
<td>Course Code</td>
<td>Event Description and Details</td>
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<td>Oct 24</td>
<td>Psy335</td>
<td>Other unintended effects continued: placebo, “special attention”, demand characteristics, experimenter bias. Planning Team Research Projects continued…</td>
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<tr>
<td>Oct 31</td>
<td>Psy335 &amp; Psy403</td>
<td>Research Proposal due (20%) &amp; Ethics application due (5%) Data collection for team projects</td>
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<td>Nov 7</td>
<td>Psy335 &amp; Psy403</td>
<td>Data collection continued</td>
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<td>Nov 14</td>
<td>Psy335 &amp; Psy403</td>
<td>Data collection continued</td>
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<td>Nov 21 BSB248</td>
<td></td>
<td>Communicating your results: Tips on designing a talk with PowerPoint and tips on designing a poster. What are the requirements for a good scientific report? Data Analysis</td>
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<td>Nov 28 Psy335</td>
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<td>Team Talk (10%) 3LL3 conference: presentation of research.</td>
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<td>Dec 5</td>
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<td>Scientific Report Due 5pm (20%) Last day of classes: no attendance required</td>
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**Other Important Dates**

Last day for drop and add: September 18
Last day for “penalty-free” drop: November 3

**Academic Dishonesty:** notice from the Dean’s Office

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 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/senate/academic/ac_integrity.htm](http://www.mcmaster.ca/senate/academic/ac_integrity.htm)
The following illustrate two forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one’s own or for which other credit has not been obtained.
2. Improper collaboration in group work.

Attention is drawn to the Statement on Academic Ethics and the Senate Resolutions on Academic Dishonesty as found in the Senate Policy Statements distributed at registration and available in the Senate Office. Any student who infringes one of these resolutions will be treated according to published policy.

Message from the Chair of Psychology

The instructor cannot be responsible for returning long distance calls from students. Any student wishing to reach an instructor is invited to e-mail the instructor.

Final Grade:

A+  90-100%;  A  85-89;  A-  80-84;  B+  77-79;  B  73-76;  B-  70-72;
C+  67-69;  C  63-66;  C-  60-62;  D+  57-59;  D  53-56;  D-  50-52;  F  0-49%.

The instructor reserves the right to adjust final marks up or down, on an individual basis, in light of special circumstances and/or the individual's total performance in the course. Furthermore, the instructor reserves the right to change the weight of any portion of this marking scheme. If changes in the marking scheme are made, your grade will be calculated using the original weightings and the new weightings, and you will be given the higher of the two grades. At the end of the course, the grades may be adjusted, but this can only increase your grade and will be done uniformly. The instructor will use the grade equivalence chart of your calendar to convert between letter grades, grade points and percentages.