The instructor and university reserve the right to modify elements of this 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 explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

1 Contact Information

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Teaching Assistant</th>
<th>Teaching Assistant</th>
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<tbody>
<tr>
<td>Patrick Bennett</td>
<td>Yaro Konar</td>
<td>Eugenie Roudaia</td>
</tr>
<tr>
<td>office PC-412</td>
<td>PC-428</td>
<td>PC-428</td>
</tr>
<tr>
<td>email <a href="mailto:bennett@mcmaster.ca">bennett@mcmaster.ca</a></td>
<td><a href="mailto:konary@mcmaster.ca">konary@mcmaster.ca</a></td>
<td><a href="mailto:roudaia@mcmaster.ca">roudaia@mcmaster.ca</a></td>
</tr>
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<td>office hour T.B.A.</td>
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The website for this course is www.psychology.mcmaster.ca/bennett/psy710. Students should check the website periodically during the term for announcements and course notes.

2 Course Information

This course covers statistical techniques that are commonly used in behavioural research, especially Psychology, and therefore emphasizes the use of linear models to analyze data that have been collected using balanced experimental designs. The course material is designed with the assumption that students have completed an undergraduate statistics course. A review of basic statistical concepts is provided in the Basic Statistics tutorial on the CD that comes with the course textbook. A link to the tutorial also is provided on the course website.

3 Meeting Times

The course consists of a weekly lecture, held on Tuesdays, 2:30-4:30, in PC-335, and a two-hour, computer-based laboratory held on Wednesdays in PC-154 at 10:30-12:30.
4 Statistical Laboratories

The purpose of the labs is to provide students with opportunities to work on statistical problems related to the lectures. At the beginning of each lab, students will be provided with materials that describe the lab exercises. Each lab handout also will contain references to relevant sections in *A Beginner’s Guide to R*. Students are expected to complete all lab exercises, but they will not be graded. Answers to the exercises will be posted on the course website.

5 Required Textbooks


6 Software

Laboratory exercises will use the statistical computing environment, R. No familiarity with R is assumed. Versions of R for Windows, OS X, and Linux can be obtained at http://cran.r-project.org/. Students are encouraged to install R on their own computers.

*A Beginner’s Guide to R* contains many examples of how to use R to perform a variety of tasks. The following documents – which can be obtained at http://cran.r-project.org/other-docs.html – also are recommended for people who are unfamiliar with R.


7 Grading

Grades will be based on two in-class exams administered in the statistics laboratory. Each exam constitutes one-half of the final grade. Students will have access to R during the exams.

**Missed Exams:** All students must complete both tests. If you miss a test, and if you have a valid excuse, then you must petition to take the test at another time.

*It is the student’s responsibility to notify the instructor of the reasons for missing a test in a timely fashion.* Students who miss a test due to illness must submit a McMaster University Student Medical Certificate and a Missed Term Work form to the Associate Dean for Graduate Studies within five business days of the missed exam. Both forms are available at

www.science.mcmaster.ca/associatedean/forms/missedwork.html,

which also contains a fuller description of the University’s policy regarding missed term work.
8 Academic Integrity

Students are responsible for demonstrating behaviour that is honest and ethical in their academic work, and are expected to be familiar with the University’s regulations regarding academic integrity (see section 6.1, Graduate Calendar 2009-10, p 15-16).

A copy of the Graduate Calendar can be obtained at www.mcmaster.ca/graduate/calendar.html.

9 Schedule of Lectures

The following schedule is approximate: Dates for specific lecture topics may change as we progress through the term, but every attempt will be made to keep the same dates for the tests/exams. All readings refer to Designing experiments and analyzing data (DEaAD). Students should try to complete the readings before the lectures. Not shown in the reading list are references to extensive course notes on most of the chapters covered in class. Links to the notes can be found on the course website.

Lab assignments will be distributed just prior to the start of each lab. Some of the lab assignments will refer to sections of A Beginner’s Guide to R that students should read after completing the lab.

1. Sep. 14: Testing hypotheses about group means in a one-way design
   Reading: DEaAD: Chapter 3

2. Sep. 21: Practicum: Using R to perform an ANOVA (Meet in PC-154)
   Reading: T.B.A.

3. Sep. 28: Linear contrasts & multiple comparisons
   Reading: DEaAD: Chapters 4 (149-63; 177-80) & 5 (193-97; 200-05; 209-11; 213-18)

4. Oct. 5: Factorial designs: main effects & interactions
   Reading: DEaAD: Chapter 7 (275-297) & Chapter 8 (354-60)

5. Oct. 12: Factorial designs: linear contrasts, simple main effects & unbalanced data
   Reading: Chapter 7 (297-309)

   Reading: DEaAD: Chapter 9 (399-428)

7. Oct. 26: Review and Term Test
   Review: Oct. 26
   Test: Oct. 27

8. Nov 2: Designs with random or nested factors
   Reading: DEaAD: Chapter 10 (469-481; 494-507)

9. Nov. 9: One-way within-subject designs
   Reading: DEaAD: Chapter 11 (pp. 525-50; 563-67)

10. Nov. 16: One-way within-subject designs (continued)
    Reading: DEaAD: Chapter 11 (pp. 525-50; 563-67)

11. Nov. 23: Higher-order within-subject designs
    Reading: DEaAD: Chapter 12 (573-82; 592-605)

12. Nov. 30: Higher-order within-subject designs (continued)
    Reading: DEaAD: Chapter 12 (573-82; 592-605)

13. Dec 7: Review and Final Exam
    Review: Dec. 7
    Exam: Dec. 8