



Department of Psychology
PSYC 2017H-A: Basic Research Methods and Statistics II
Winter 2012 Oshawa

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Psychology Dept.	LHS C104, 705-748-1011 ext. 7535		

Course Description: *A continuation of the introduction to methods and statistical procedures in psychological research used to explore inferential statistics. Includes hypothesis testing procedures such as dependent and independent t-tests, one- and two-way ANOVA, and repeated measures ANOVA.*

Prerequisite A grade of 60% or higher in PSYC 2016H. Excludes PSYC 215

Course Format: **Lecture:** Tuesdays: 11:10 am – 2:00pm [TN 121]

Computer Lab (WebStatistica) Wednesdays [11:10 – 1:00 pm TN 112]. For statistical analyses, WebStatistica (a web-based statistics program) is available on-line through a dedicated Trent WebStatistica server (can be through link on WebCT (details in class) or directly: <https://webstatistica.trentu.ca/>).

Students are expected to conduct statistical analyses for labs and assignments, etc., using WebStatistica.

WebCT (MLS) is used extensively in this course.

Required Readings: www.trentu.ca/academicinegrity
American Psychological Association (2010): 1.10 (pages 15 - 16) and 6.0.1 (page 170)

Required Texts: Nolan, S.A., & Heinzen, T.E. (2012). *Statistics for the behavioral sciences* (2nd ed.). New York, NY: Worth.

Leary, M.R. (2012). *Introduction to behavioral research methods* (6th ed.). Boston, MA: Pearson Publishing.

American Psychological Association (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, D.C.: Author

Recommended Text: Mitchell, M. L., Jolley, J. M., & O'Shea, R. P. (2010). *Writing for psychology* (3rd ed.). Belmont, CA: Wadsworth.

Evaluation:	1. Lab Report	12%
	2. (Home)Work Assignment Sheets	20%
	3. Quizzes (7 @ 3.0 % each)	21%
	4. Term Test	22%
	5. Final Examination	25%
	6. SONA – bonus marks	4%

Learning Outcomes:

By the time you have successfully completed this course you should be able to:

1. Recognize, understand & utilize statistical notation, formulae, & concepts as they apply to hypothesis testing (e.g., ANOVA, *t*-test, *z*-test);
2. Apply, generate, & interpret the results of a variety of statistical techniques, including both descriptive & inferential methods with an emphasis on techniques involved with hypothesis testing;
3. Understand & apply the appropriate research design and statistical techniques when provided with a research scenario / data;
4. Further develop computer based statistical data analysis skills;
5. Apply the concepts previously outlined to understanding & reviewing psychology journal (research) articles; &
6. Apply / understand / utilize APA publication style.

Explanation of Assignments

1. Lab Reports: One laboratory will be conducted during the course.

The purposes of the lab are:

- 1) to provide hands on experience in the application of techniques to real psychological data;
- 2) to develop lab report writing skills;
- 3) to determine the power of the scientific method for the study of diverse psychological questions;
- 4) to encourage analytical thinking skills with respect to statistical and psychological issues; and
- 5) to develop skills necessary for finding and reporting relevant scientific articles and other information pertinent to the lab.

Students are expected to participate in gathering data for the lab.

Students are strongly encouraged to use the Leary (2008/2012) and the APA manual (6th edition) texts as guides to proper APA style.

Readings concerning the lab assignments will be placed on electronic reserve (e-reserves) at the Trent (Bata) library and may be placed on reserve in the Trent Oshawa library. Additional materials will be available via WebCT. The lab write-up will include having the student find journal articles that are current and relevant to the lab topic.

Lab reports must be written in the format specified in the Publication Manual of the American Psychological Association as specified in Mitchell et al. (2010). Also, see the Leary (2008/2012) text for a full chapter on scientific writing (Chapter 15/16).

On-line access to articles / items on reserve and electronic reserves (e-reserves):

The "core" articles as well as other items pertaining to the lab can be accessed directly (online) through the e-reserves section of the Trent library (www.trentu.ca/admin/library). These items will appear as Adobe (.pdf) files. Details on how to access these items will be provided in class.

The lab will be completed and submitted in sections. See the course outline for submission dates of the various components.

LAB DUE DATES: 14 Feb (Introduction) / 28 Feb (Method) / 27 March (results + discussion + reference list)

The various portions of the laboratory assignment **must** be submitted on or before the due date supplied (*at the beginning of the lecture*). A penalty **will** be imposed for late submissions. Extensions may be granted for medical (please submit letter from a physician) or compassionate reasons (documentation required). If a submission is late

without approved extension, it will be penalized at the rate of 10% per school day (i.e., Monday - Friday). Thus, if a lab report is submitted two (2) days late and the report is assigned a grade of 75%, it would receive a final grade of 55%. *Reports more than 10 days late will be assigned a grade of zero.*

Under no circumstances will a late submission be accepted after the labs have been marked and returned.

Assignments or labs that are highly similar (or identical) and/or exhibiting plagiarized material will be heavily penalized and will be sent to the Chair of the psychology department according to university policy.

2. (Home)Work Assignment Sheets: Will consist of a set of statistical or method or APA format problems for the student to solve. These will provide more practice and familiarization with various aspects of computations and calculations. *Unless otherwise specified the work sheet is to be submitted at the following class.* Work sheets will be assigned and distributed as necessary. **Homework sheets will not be accepted after the due date (NO EXCEPTIONS).**

In addition, You will be required to solve specific problems assigned from the available end-of-chapter problems in the Nolan & Heinzen (2010) text. The end-of-chapter problems **MUST** be hand written (**Neither typed nor printed nor photocopied assignments are acceptable**). Include all computations and submit on (or by) the due date.

IF THE END-OF-CHAPTER PROBLEMS ARE NOT HANDWRITTEN, THEN THIS PORTION OF THE WORKSHEET WILL RECEIVE A GRADE OF ZERO (0).

Late homework sheet assignments will be penalized at the rate of 10% per school day (i.e., Monday - Friday). Thus, if a late assignment is submitted two (2) days late and the report is assigned a grade of 75%, it would receive a final grade of 55%. *Reports more than 10 days late will be assigned a grade of zero.*

Under no circumstances will a late submission be accepted after homework assignments have been marked and returned.

3. Quizzes: There will be a quiz on certain dates [as shown on the course outline]. Each quiz will test material learned since the previous quiz (usually, though not always on the subject matter from the previous lecture). Generally, a quiz will last 15 - 25 minutes. Quizzes will always be held at the beginning of the class. *Formulae & tables will be provided.*

PLEASE BRING A CALCULATOR

If you miss a quiz, you will forfeit the mark for that specific quiz (NO EXCEPTIONS).

5. Term test: The term test (2 - 3 hours) is scheduled for **Tuesday 7 February** and will test material covered since the beginning of the term. The term test will consist, predominately, of multiple-choice questions, *though other formats may also be included.* Information covered will include knowledge from both required texts and lectures. Formulae and tables will be provided. Students are expected to arrive on time and to have calculators.

NOTE: STUDENTS CANNOT USE ANY OTHER DEVICE EXCEPT A CALCULATOR - DEVICES CONTAINING CALCULATOR FUNCTIONS [SMART PHONES / CELL PHONES / ETC ARE NOT ACCEPTABLE]

6. Final exam: The Final exam (3 hours) is scheduled for **Tuesday 17 April** and will cover material presented after the first test and will *emphasize all material covered since the first test.* The final examine will consist, predominately, of multiple-choice questions, *though other formats may also be included.* Information covered will include knowledge from both required texts and

lectures. Formulae and tables will be provided. Students are expected to arrive on time and to bring a calculator. **NOTE: STUDENTS CANNOT USE ANY OTHER DEVICE EXCEPT A CALCULATOR - DEVICES CONTAINING CALCULATOR FUNCTIONS [SMART PHONES / CELL PHONES / ETC ARE NOT ACCEPTABLE]**

<p>Course Policy on Late Submissions</p>	<p>Assignments / homework sheets / labs / are due at the beginning of class. Late assignments / homework sheets / labs / <u>will be penalized</u> at the rate of 10% per school day (i.e., Monday - Friday). Thus, if a lab report is submitted two (2) days late and the report is assigned a grade of 75%, it would receive a final grade of 55%. <i>Work submitted more than 10 days late will be assigned a grade of zero.</i> <u>Under no circumstances will a late submission be accepted after assignments / homework sheets / labs have been marked and returned.</u></p> <p><i>Assignments or labs that are highly similar (or identical) and/or exhibiting plagiarized material will be heavily penalized and will be sent to the Chair of the psychology department according to university policy.</i></p>
<p>Course Policy on attendance in class/labs</p>	<p>Students are <u>expected</u> to attend all scheduled lectures and labs. Students are expected to download and complete the worksheets, in-class assignments, lab assignment (and other work) located on the WebCT (MLS) site. There are no marks attached to attendance.</p>

Participation in Research- Sona System

Voluntary participation in departmental research provides an opportunity to earn up to an additional 4% to be added to your final grade. See details on your class website. Additional information can be referenced on the Psychology Departmental website at: <http://www.trentu.ca/psychology/researchparticipation.php>

Through voluntary participation in four hours of research conducted by Psychology faculty and senior students, students in this course may earn an additional 4% to be added to their final grades. Thus, for example, a grade of C+ (68%) would become B- (72%) for a student who participated for the maximum of 4 hours, with each hour of participation earning 1%.

As an **alternative** to participation in research, students can complete the following activities to earn an additional 2% to their final mark. A total of two alternatives can be completed for a total of 4%.

- a Attend two separate Department of Psychology colloquia during the academic year and write a brief report (500 words) on the contents of both invited talks.
- b Write a 750 word report on a psychology journal article (supplied by course instructor)

Regardless of which option is chosen, the 2% bonus credit can only be earned if the typed report is submitted to course instructor by **6 April 2012**.

Student may complete any combination of research or assignments to acquire the bonus 4% credit.

To find out what research is currently available for you to participate in, please login to the Psychology Research Participation System at <http://trentu.sona-systems.com/>

The Student User Guide that explains how to login, sign up for studies, and track credits is available off the Psychology website <http://www.trentu.ca/psychology/>

Look for the link entitled "Research Participation Pool".

Note that it is **your responsibility to accurately register the correct course code** (i.e., registering with the wrong course code will impede assignment of bonus credits).

Workshops: The workshops are designed to: 1) provide a forum for discussion of methodology and design issues in psychological research; 2) to clarify and exemplify the statistical concepts and techniques discussed in the test and lectures; 3) to allow students to work on problems; and 4) to acquire skills in computerized statistical analyses using *WebStatistica*. Some of the workshops will also be used as part of the laboratory component for the course. Students are strongly encouraged to attempt problems in the text and from other sources (such as a study guide and/or questions, calculations and others items accessed through the text website) as well as problems assigned in class using computational methods taught in the course and then to analyse these same problems using WebStatistica. This is important since hand calculations and computer data analysis will be required for a variety of assignments.

Students are responsible for information in the texts that is not covered in the lectures.

INSTRUCTOR'S NOTES:

Note 1: All submitted work should be typewritten, double-spaced with at least inch (2.54 cm) margins and **MUST** conform to the American Psychological Association standards. ***This means that the style of writing, citations and quotations for the lab assignment should conform to the APA Publication Manual of the American Psychological Association (6th ed.).***

As an aid to writing and research in Psychology students **may** consult: Mitchell, M. L., Jolley, J. M., & O'Shea, R. P. (2010). *Writing for psychology: A guide for students*. Belmont, CA: Wadsworth. Both the APA manual and Mitchell et al. (2010) texts are available in both the Bata Library (Trent University) and Trent Oshawa library.

Note 2: Due Dates: Lab reports and assignments must be submitted on the due date, ***at the beginning of class***. Extensions will *only* be granted in documented cases of **serious illness** or compassionate grounds and only if arranged **before** the due date. ***Late lab reports and assignments will be penalized 10% per day overdue.*** Lab reports must represent independent work. Highly similar (or identical) assignments or labs will be penalized (see Note 3 below).

Under no circumstances will a late submission be accepted after lab reports or assignments have been marked and returned.

Note 3. PLEASE NOTE: TWO OR MORE STUDENTS SUBMITTING AN IDENTICAL LAB OR ASSIGNMENT WILL BE PENALIZED. (Also see University policies on page 8).

Note 4: *It is the responsibility of the student to ensure that written assignments (e.g., essays, labs, etc.) are handed directly to the professor on or before the due date (at the beginning of the lecture). The professor assumes no responsibility for locating and grading assignments handed in to the Department of Psychology, the Trent University in Oshawa office or at any other location. The professor will neither grant extensions nor waive penalties for assignments that are claimed by the student to have been submitted and have not been received by the professor. Please Note: The Trent Oshawa Office will not accept written work on behalf of a professor.*

Never place an assignment under an office door and assume that the appropriate professor will receive it! Please ensure that you have stored and/or printed at least two additional copies of your work.

Note 5: On occasion a student may be unable to write a **term test** in the regular period due to *serious* illness (please submit a letter from a physician) or some other exceptional circumstance or compassionate reasons (for which documentation will be required). In such cases, the student should contact the instructor **before** the regularly scheduled test period, or if this is not possible, as soon as possible following the term test. If the instructor is notified of the circumstances in good time, then arrangements can be made to deal with the situation, otherwise a grade of **zero** will be assigned (*c.f. with Note 11 on this page*).

Note 6: *MyLearningSystem* (WebCT) is an established feature of this course, using a dedicated website through the Trent university computer department. Only students enrolled in this course will have access to this website, where various materials (e.g., course syllabus, course calendar, summary notes, links to websites, supplementary course materials, etc.) are easily accessible to the student. To access the *myLearningSystem* site, you will need your Trent university email address (username) and your student number (password).

Note 7: All email correspondence with students will be sent to the student's Trent University email address. If you use an alternate email account, please ensure that your Trent email address **forwards** email to that address. Consult on-line information at the Trent University website for help with forwarding email (www.trentu.ca/it).

Note 8: Under some circumstances, essays and/or laboratory reports cannot be returned to the students by the time the final exam is written. Because it is against the policy of the psychology department to leave student essays or labs for pickup, students who wish to receive their essays and/or labs should, when they are handing in their work, submit a stamped, (at least \$2.50) self-addressed manila envelope (firmly attached to the essay/lab).

Note 9: To aid in the demonstration / comprehension of various statistical concepts, procedures, and processes: It is important to **always** bring your Nolan & Heinzen (2012) text with you to the lectures.

Note 10: The use of cell phones and laptop computers during lectures is **strictly prohibited**. *Students using these devices during the lecture will be asked to turn them off.*

Note 11: **PLEASE NOTE THAT ALL COURSE COMPONENTS (E.G., ASSIGNMENTS, EXAMS, LAB COMPONENTS, QUIZZES, TESTS & WORKSHEETS) ARE EXPECTED TO BE COMPLETED IN FULL AND ON TIME (SUBMITTED BY THE DUE DATE/TIME OR COMPLETED AT A PARTICULAR TIME/DATE) REGARDLESS OF OTHER ON-GOING CONCERNS (E.G., JOB RESPONSIBILITIES; TRAVEL ARRANGEMENTS; VACATION PLANS; OTHER OBLIGATIONS).**

EARLY SUBMISSIONS ARE ALWAYS WELCOME!

Note 12: *Failure to complete / submit one or more marked components of the course means forfeiting marks associated with that component.*

Note 13: Students may be able to use the 1st edition of the Nolan & Heinzen (2008) text and the 5th edition of the Leary (2008) text though it will be the responsibility of the student to recognize and understand the differences between the different editions of the texts in regards to the material covered, computational differences, questions from texts, changes in chapter order / contents, etc. This is essentially due to the fact that different editions can and may include a variety of differences in the topics covered / omitted / altered.
Chapter numbers in the course outline correspond to the latest editions of each text.

Note 14: The lectures and some other course materials are copyright © Dr. Jeffrey Adams or the Department of Psychology at Trent University. Students cannot in any way or by any means record or broadcast or distribute or publish the information presented in lectures or any of the information available on the *MyLearningSystems* website without the expressed permission of Dr. Adams.

PSYC 2017H-A WI2012 Schedule

Date	Topic	Reading	Workshop	Quiz	Assignment / Lab
10 Jan	Introduction; Issues in experimental research; Ethics	L. Chs. 9, 15	NO		
17 Jan	Introduction to hypothesis testing	L. Ch. 11 N & H Ch. 7 (pp. 173-176)	YES		Submit first worksheet (Stats review) Lab data collection
24 Jan	Hypothesis testing with means of samples and confidence intervals	N & H Ch. 7 (pp. 163-171) + N & H Ch. 8 (pp. 195-201)	YES	QUIZ 1	Submit second worksheet (APA reference)
31 Jan	Statistical significance, effect size & power	L. Ch.2 (pp.41 - 44) N & H Ch. 8 (202 - 215)	YES	QUIZ 2	Submit third worksheet (confidence interval)
7 Feb	TERM TEST	CHAPTERS: N & H: 7 & 8 L: 2, 9, 11 & 15			
14 Feb	Introduction to t-tests: single sample & dependent means	N & H Ch. 9 N & H Ch. 10	YES		Submit lab Introduction + abstract
21 Feb	TRENT READING WEEK	NO CLASS			
28 Feb	t-test for independent means	L Ch. 11 (pp. 239 - 242) N & H Ch. 11	YES	QUIZ 3	Submit lab Method section
6 Mar	Experimental Design + Introduction to Analysis of Variance (ANOVA)	L Ch. 10 N & H Ch. 12	YES	QUIZ 4	Submit fourth worksheet: t-tests
13 Mar	Introduction to Analysis of Variance (ANOVA) + post hoc comparisons	L. Ch 12 N & H Ch. 12 (pp. 320)	YES		
20 Mar	Factorial ANOVA + Interactions + Post hoc comparisons	N & H Ch. 14	YES	QUIZ 5	

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Date	Topic	Reading	Workshop	Quiz	Assignment / Lab
27 Mar	Chi-square	N & H Ch. 17	YES	QUIZ 6	Submit lab results + discussion + references Submit fifth worksheet: ANOVA
3 Apr.	Within group ANOVA	N & H Ch.13	NO	QUIZ 7	Submit sixth Worksheet: Chi square
17 Apr.	<u>FINAL Exam</u>	CHAPTERS: N & H: 9, 10, 11, 12, 13, 14, & 17 L: 9, 10, 11, 12			

University Policies

ACADEMIC INTEGRITY:

Academic dishonesty, which includes plagiarism and cheating, is an extremely serious academic offence and carries penalties varying from a 0 grade on an assignment to expulsion from the University. Definitions, penalties, and procedures for dealing with plagiarism and cheating are set out in Trent University's *Academic Integrity Policy*. You have a responsibility to educate yourself – unfamiliarity with the policy is not an excuse. You are strongly encouraged to visit Trent's Academic Integrity website to learn more – www.trentu.ca/academicintegrity.

ACCESS TO INSTRUCTION:

It is Trent University's intent to create an inclusive learning environment. If a student has a disability and/or health consideration and feels that he/she may need accommodations to succeed in this course, the student should contact the Disability Services Office (BL Suite 109, 748-1281, disabilityservices@trentu.ca) as soon as possible. Complete text can be found under Access to Instruction in the Academic Calendar.

Departmental Policy on Tests, Exams, and Assignments

A. MIDTERMS & FINAL EXAMINATIONS

Midterm examinations for half courses within the Psychology Department are scheduled by the instructor of the course. Midterm examinations for full courses and final examination for all courses are scheduled by the Registrar's Office. Students are strongly urged NOT to make any commitments (i.e., vacation, job related, or other travel plans) during either the term as a whole or the final examination period. Students are required to be available for all examinations during the periods for which they are scheduled (as published in course syllabi).

B. DEFERRAL OF MIDTERM / FINAL EXAMINATIONS and/or TERM WORK

Extensions of deadlines for completion of assignments or writing of midterms/final examinations may be granted to students on the basis of illness, accident, or other extreme and legitimate circumstances beyond their control. Consideration for deferrals will not normally be granted on the basis of vacation/travel plans or job-related obligations.

C. SUPPORTING DOCUMENTATION

Students should expect that supporting documentation will be required and must be submitted before a deferral is approved. For illness or accident, supporting documentation will take the form of: (1) the Trent University Medical Certificate from Health Services: (<http://www.trentu.ca/healthservices/medical.html>), or (2) a certificate or letter from the attending physician clearly indicating the start and end dates of the illness and the student's inability to write an examination, complete assignments, and/or attend classes, as relevant to the particular request. For other circumstances, students should consult the individual Psychology faculty member about acceptable forms of documentation.

Special Note:

Written assignments will not be accepted by staff in the Trent in Oshawa office. They must be submitted directly to the course instructor. Marked assignments will not be left in the Trent in Oshawa Office for pick up; they will be returned to students in class or by mail if a stamped, self addressed envelope is provided.

Notes

1. Academic Integrity:

For the purpose of interpreting and applying the University policy on academic dishonesty, the Department of Psychology has adopted the following:

When a student submits a piece of written work in fulfillment of an assignment, he/she implicitly acknowledges the following: a) that she/he is the sole author of the work; b) that the wording and organization of the work, apart from acknowledged quotations, is her/his own; and c) that she/he has not and will not submit this work, either as a whole or in part, to satisfy another course requirement. These basic assumptions will be reasonably interpreted. They do not preclude collaboration between students upon a single project, by prior arrangement with the instructor, for shared academic credit (either for written or oral presentation).

For an elaboration of the Department's policy on, and for specific examples of, plagiarism, students should consult the sections on academic

honesty (pp. 6-8), and appropriate citing and referencing (pp. 135-137, 169) in Mitchell et al. (2010). Students who have doubts about what might be considered academic dishonesty are urged to consult the instructor of the course. Ignorance of the University or Department policy does not excuse academic dishonesty. Submissions that fail to meet one or more of these considerations will be subject to procedures laid down in the policy on academic dishonesty as stated in the University calendar.

2. It is the policy of the Department NOT to accept faxed / emailed assignments.
3. The same assignment cannot be submitted in more than one course without the prior written permission of all instructors concerned. The written approval must be attached to the work when it is submitted.
4. Students are required to use American Psychological Association style (6th edition), as described in Mitchell et al. (2010), for all written assignments.
5. Please see the Trent University academic calendar for University Diary dates, Academic Information and Regulations, and University and departmental degree requirements.
6. Last date to withdraw from a WI half-term course without academic penalty in 2011-2012 is: 9 March 2012.