



## Statistics for Psychology II

### Psychology 2851B, section 530

Dr. John Mitchell

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#### COURSE DESCRIPTION

This course expands on basic statistics with an aim at developing an understanding of the use and interpretation of statistics in more complex Psychological research designs. Topics include repeated samples testing, estimation, analysis of variance, correlation, simple linear regression and non-parametric tests.

**Prerequisites:** At least 60% in Psychology 2850A/B

**Antirequisites:** All University-level statistics courses numbered 2000 or above (see the Academic Calendar for a full listing of antirequisite courses).

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#### COURSE INFORMATION

Instructor: Dr. John Mitchell  
Office: BR 221 (2<sup>nd</sup> floor of the Merici Wing)  
E-mail: jbmitch@uwo.ca  
Telephone: Ext. 28116.  
Office Hours: Tuesday 9:00 – 10:00, and by appointment.

Time and Location of Classes: Tuesday 11:30 – 1:30, BR 204  
Thursday 11:30 – 12:30, BR 204

**TEXTBOOK, required** (this is the same textbook as used in Psych 2850A/B)

Gravetter, F. J. & Wallnau, L. B. (2017). *Statistics for the Behavioral Sciences, 10<sup>th</sup> edition*. Thomson Wadsworth.

#### LEARNING OUTCOMES

By the end of the course, students will be able to:

- Determine what statistical analysis is appropriate for a set of experimental data;
- Perform appropriate statistical analyses for a variety of data sets including t-tests for related samples, analysis of variance, correlation, regression and non-parametric tests;
- Understand and calculate statistical confidence intervals as an alternative to the hypothesis test;

- Appropriately report and interpret the results of the various statistics tests covered in the course.

The study of Statistics importantly involves practise in quantitative reasoning and contributes to the **Brescia Competencies** of:

- *Critical Thinking*: being able to critically evaluate and interpret scientific evidence as part of hypothesis testing is an important aspect of Critical Thinking and at its core, that is exactly why we use statistics;
- *Inquiry and Analysis*: one of the skills that you will develop in statistics is the ability to break down a complex problem or research question into testable components and to be able to assess, quantitatively, the relationships among events;
- *Problem Solving*: At its core, statistics in the behaviour sciences are used as a tool in Problem Solving.

## EVALUATION

### Exams

**Spring Mid-term Test:** Scheduled for Tuesday, February 28<sup>th</sup>, during class time. The Spring Mid-term Test will cover material from Chapters 11 – 14, sections 8.5, 9.3 and 10.4, and the corresponding classes.

**Final Examination:** Scheduled during the Final Examination Period by the Registrar's Office. The final examination is based on Chapters 15 – 18, Appendix E, and pages 701 – 715.

The Mid-term Test and Final Examination will include questions in different formats which may include calculation questions, definition/short answer, and multiple choice. You *will* have to calculate statistical terms. Marks will be given for selecting the correct statistical test (unless given as part of the question), steps in working out the problem, arriving at the correct value for the statistics, and, in some cases, interpretation of the statistic. That is, even if you arrive at an incorrect final term, marks for intermediate steps may be available; hence it is important that you show all work.

The test and final exam are closed book. Any necessary formula and tables will be provided with the examination. Calculators, but not laptops, cell phones or other devices, are allowed in the test and exam. That is, you cannot use your cell phone as a calculator in a test or exam.

Additional details about test and exam formats will be provided in class as we approach the test or exam date.

### Assignments

Twenty-five percent (25%) of your mark comes from a series of short assignments. There are seven assignments and you need to submit five out of the seven. It is your choice which five you submit. If you submit more than five assignments, the marks from your best five will be used to calculate your total assignment mark.

Assignments will usually involve working out a statistical problem (showing all calculations) and providing a concise written interpretation and/or graphic presentation of the results of the analysis. Assignments will be posted on the course OWL site.

*Assignments are due at the start of class on the due date.* Assignments submitted after class has started will be considered late and the late penalty will be applied.

**Late Assignments:** There is a per day penalty for assignments submitted after the start of class on the due date. The late is penalty is 1 mark (out of 5) per day late.

<i>Assignment</i>	<i>Topic</i>	<i>Due</i>
Assignment 1	t-test and Confidence Intervals	Jan. 19
Assignment 2	Introduction to ANOVA	Jan. 31
Assignment 3	Repeated Measures ANOVA	Feb. 9
Assignment 4	Two Factor ANOVA	Mar. 4
Assignment 5	Correlation and Regression	Mar. 16
Assignment 6	Chi-Square Statistic	Mar. 28
Assignment 7	Non-parametric Statistics	Apr. 6

### Evaluation Summary:

Spring Midterm	35%
Final Examination	40%
Assignments (5 x 5%)	25%

### GENERAL INFORMATION

#### Statistical Tables

We will be using the tables found in the back of the textbook (Appendix B). You should either bring your textbook or a photocopy of the tables to class. During regular classes (but not the mid-term test or final exam), you are welcome to share your textbook or photocopied statistical tables with your classmates.

#### Calculator

**Bring your calculator with you to all classes.** It should have squares, square roots, and some memory capacity along with the basic arithmetic operations. It would be to your advantage if your calculator has basic statistical functions such as means and sum of squares ( $\Sigma x^2$ ). You do not need an expensive or sophisticated calculator; even quite basic models will do everything that you need.

You should already be familiar with how your calculator functions from using it in Psych 2850A/B. You should always use your calculator, not your cell, to perform calculations. You will not be allowed to use your cell during the test or exam and that is not the time to figure out how your calculator works. You want to go into exams comfortable with using your calculator, and that happens only with practise.

**CLASS SCHEDULE**

<b>Date</b>	<b>Topic</b>	<b>Reading</b>
Jan. 5, 10	<i>t</i> Test for Related Samples	Ch. 11
12, 17	Effect Size and Confidence Intervals	Sec 8.5 (259 – 265) Sec 9.3 (295 – 303) Sec 10.3 (325 – 333)
19, 24	Introduction to ANOVA	Ch. 12
26, 31	Repeated Measures ANOVA	Ch. 13
Feb 2	Repeated Measures ANOVA	Ch. 13
7, 9, 14	Two Factor ANOVA	Ch. 14
16	Correlation	Ch. 15
21, 23	<i>Reading Week</i>	
28	<b>Spring Midterm</b>	
Mar. 2, 7	Correlation	Ch. 15
9, 14	Regression	Ch. 16
16, 21	Chi-Square Statistic	Ch. 17
23, 28, 30	Binomial Test and Tests for Ordinal Data	Ch. 18 Appendix E (687 - 699)
Apr. 4	Choosing the Correct Statistics	pages 701 - 715
6	Concluding Class	

Topics will be covered in the order given above. *Approximate* class dates are listed so that you can keep up with the readings and exercises. You should do the assigned reading before that topic is covered in class.

***Assignment Due Dates***

Assignment 1: Jan. 19  
Assignment 2: Jan. 31  
Assignment 3: Feb. 9  
Assignment 4: Mar. 4

Assignment 5: Mar. 16  
Assignment 6: Mar. 28  
Assignment 7: Apr. 6

## 2016-17 BRESCIA UNIVERSITY COLLEGE ACADEMIC POLICIES AND REGULATIONS

### 1. POLICY REGARDING MAKEUP EXAMS AND EXTENSIONS OF DEADLINES

When a student requests academic accommodation (e.g., extension of a deadline, a makeup exam) for work representing 10% or more of the student's overall grade in the course, it is the responsibility of the student to provide acceptable documentation to support a medical or compassionate claim. All such requests for academic accommodation **must** be made through an Academic Advisor and include supporting documentation. Academic accommodation for illness will be granted only if the documentation indicates that the onset, duration and severity of the illness are such that the student could not reasonably be expected to complete her academic responsibilities. Minor ailments typically treated by over-the-counter medications will not normally be accommodated. Documentation shall be submitted as soon as possible to the student's Academic Advisor indicating the period of illness and when the student should be able to resume academic responsibilities. Students must submit their documentation along with a request for relief specifying the nature of the accommodation being requested no later than two business days after the date specified for resuming responsibilities. Appropriate academic accommodation will be determined by the Dean's Office in consultation with the student's instructor(s). Please note that personal commitments (e.g., vacation flight bookings, work schedule) which conflict with a scheduled test, exam or course requirement are **not** grounds for academic accommodation.

A UWO Student Medical Certificate (SMC) is **required** if a student is seeking academic accommodation on medical grounds. This documentation should be obtained at the time of the initial consultation with the physician/nurse practitioner or walk-in clinic. A SMC can be downloaded from: <http://www.westerncalendar.uwo.ca/2016/pg117.html>. The student must request documentation sufficient to demonstrate that her ability to meet academic responsibilities was seriously affected. Please note that under University Senate regulations documentation stating simply that the student "was seen for a medical reason" or "was ill" is **not** adequate to support a request for academic accommodation.

Whenever possible, requests for academic accommodation should be initiated in advance of due dates, examination dates, etc. Students must follow up with their professors and Academic Advisor in a timely manner.

The full policy on requesting accommodation due to illness can be viewed at: [http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_illness.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_illness.pdf)

### 2. ACADEMIC CONCERNS

If you feel that you have a medical or personal problem that is interfering with your work, contact your instructor and Academic Advisor as soon as possible. Problems may then be documented and possible arrangements to assist you can be discussed at the time of occurrence rather than on a retroactive basis. Retroactive requests for academic accommodation on medical or compassionate grounds may not be considered.

If you think that you are too far behind to catch up or that your work load is not manageable, you should consult an Academic Advisor. If you consider reducing your workload by dropping one or more courses, this must be done by the appropriate deadlines (refer to the Registrar's website, [www.registrar.uwo.ca](http://www.registrar.uwo.ca), for official dates). You should consult with the course instructor and the Academic Advisor who can help you consider alternatives to dropping one or more courses. *Note that dropping a course may affect OSAP eligibility and/or Entrance Scholarship eligibility.*

The Dean may refuse permission to write the final examination in a course if the student has failed to maintain satisfactory academic standing throughout the year or for too frequent absence from the class or laboratory (<http://www.westerncalendar.uwo.ca/2016/pg130.html> )

### 3. ABSENCES

**Short Absences:** If you miss a class due to a minor illness or other problems, check your course outline for information regarding attendance requirements and make sure you are not missing a test or assignment. Cover any readings and arrange to borrow notes from a classmate. Contact the course instructor if you have any questions.

**Extended Absences:** If you have an extended absence, you should contact the course instructor and an Academic Advisor. Your course instructor and Academic Advisor can discuss ways for you to catch up on missed work and arrange academic accommodations, if appropriate.

### 4. POLICY ON CHEATING & ACADEMIC MISCONDUCT

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: <http://www.westerncalendar.uwo.ca/2016/pg113.html>

Students are responsible for understanding the nature of and avoiding the occurrence of plagiarism and other academic offences. Students are urged to read the section on Scholastic Offences in the Academic Calendar. Note that such offences include plagiarism, cheating on an examination, submitting false or fraudulent assignments or credentials, impersonating a candidate, or submitting for credit in any course without the knowledge and approval of the instructor to whom it is submitted, any academic work for which credit has previously been obtained or is being sought in another course in the University or elsewhere. Students are advised to consult the section on Academic Misconduct in the Western Academic Calendar.

If you are in doubt about whether what you are doing is inappropriate or not, consult your instructor, the Student Services Centre, or the Registrar. A claim that "you didn't know it was wrong" is not accepted as an excuse.

The penalties for a student guilty of a scholastic offence (including plagiarism) include refusal of a passing grade in the assignment, refusal of a passing grade in the course, suspension from the University, and expulsion from the University.

#### **Plagiarism:**

Students must write their essays and assignments in their own words. Whenever students take an idea or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western Academic Calendar).

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com.

#### **Computer-marked Tests/exams:**

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating. Software currently in use to score computer-marked multiple-choice tests and exams performs a similarity review as part of standard exam analysis.

## 5. PROCEDURES FOR APPEALING ACADEMIC EVALUATIONS

All appeals of a grade must be directed first to the course instructor. If the student is not satisfied with the decision of the course instructor, a written appeal signed by the student must be sent to the Department Chair. If the response of the department is considered unsatisfactory to the student, she may then submit a signed, written appeal to the Office of the Dean. Only after receiving a final decision from the Dean may a student appeal to the Senate Review Board Academic. A Guide to Appeals is available from the Ombudsperson's Office, or you can consult an Academic Advisor. Students are advised to consult the section on Student Academic Appeals under Academic Rights and Responsibilities in the Western Academic Calendar (<http://www.westerncalendar.uwo.ca/2016/pg112.html> )

## 6. PREREQUISITES AND ANTIREQUISITES

Unless you have either the prerequisites for a course or written special permission from your Dean to enroll in it, you will be removed from the course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisite(s).

Similarly, you will also be deleted from a class list if you have previously taken an antirequisite course unless this has the approval of the Dean. These decisions may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course because you have taken an antirequisite course.

## 7. SUPPORT SERVICES

The Brescia University College Registrar's website, with a link to Academic Advisors, is at <http://brescia.uwo.ca/academics/registrar-services/> . The website for the Student Development Centre at Western is at <http://www.sdc.uwo.ca/> . Students who are in emotional/mental distress should refer to Mental Health @ Western [http://uwo.ca/health/mental\\_wellbeing/](http://uwo.ca/health/mental_wellbeing/) for information including a complete list of options about how to obtain help.

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Portions of this document were taken from the Academic Calendar, the Handbook of Academic and Scholarship Policy and the Academic Handbook of Senate Regulations. This document is a summary of relevant regulations and does not supersede the academic policies and regulations of the Senate of the University of Western Ontario.

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