

Statistics for Psychology II  
Psychology 2851B.530  
School of Behavioural and Social Sciences  
*Brescia Psych!*

General Information

Course #: Psych 2851B  
Section #: 530  
Term: Winter  
Year: 2019-20  
Course Day and Time: Tuesdays 1:30 – 2:30  
  Thursdays 12:30 – 2:30  
Course Location: AP 2013

Instructor Information

Name: Dr. John Mitchell  
E-mail: jbmitch@uwo.ca  
Telephone number for office appointments: 28116  
Office hours for students: Monday 9:00 – 10:00, Thursdays 3:00 – 4:00, and by appointment  
Office location: MSJ 123

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, including Soc 2205A/B, Health Sci 3801A/B, and MOS 2242A/B (see the Academic Calendar for a full listing of antirequisite courses).

Required Course Materials

Gravetter, F. J. & Wallnau, L. B. (2017). *Statistics for the Behavioral Sciences, 10<sup>th</sup> edition*. Thomson Wadsworth;  
or: Mindtap for Statistics for the Behavioral Sciences – E-text + online resources (2017), 10th edition, Cengage Learning  
These are the same course materials used in Psych 2850A/B.

## Learning Outcomes

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

1. Determine what statistical analysis is appropriate for a set of research data;
2. Calculate and correctly interpret confidence intervals;
3. Perform appropriate statistical analyses for a variety of data sets including  $t$ -tests, analysis of variance, correlation, regression and non-parametric tests;
4. Be able to correctly interpret the results of statistics tests including  $t$ -tests, analysis of variance, correlation, regression and non-parametric tests to support conclusions based on the research design, type of data and statistic used;
5. Appropriately report the results of the various statistics tests covered in the course.

## Brescia Competencies

1. *Critical Thinking (level 3)*: 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;
2. *Inquiry and Analysis (level 3)*: 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;
3. *Problem Solving (level 3)*: At its core, statistics in the behaviour sciences are used as a tool in Problem Solving.

## Teaching Methodology and Expectations of Students

This course combines lecture-style explanation of the different topics with guided and then independent working through different statistical tests and problems. Students are encouraged to work collaboratively during class.

### Technology in the Classroom

You are welcome to use your laptops, tablets and other devices in class to assist your learning. In many cases, you may want to broadcast the work you are doing on your laptop or tablet to the screen at your work pod. Laptops, tablets and other electronic devices should be used only for class related tasks, not for texting friends, posting on Instagram, or online shopping.

### Statistical Tables

We will be using the tables found in the back of the textbook (Appendix B). You should bring your textbook, a photocopy of the tables, or an electronic version 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/electronic 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 ( $\sum x^2$ ). 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 midterm or final 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.

## Copyright and Intellectual Property

PowerPoint lecture slides and notes, lists of readings, in-class activities, assignment guidelines, and other components of the course materials are typically the intellectual property of the instructor. Unauthorized reproduction through audio-recording, video-recording, photographing, sharing on social media, or posting on course-sharing websites is an infringement of copyright and is prohibited. Such action may be considered a Code of Conduct violation and lead to sanctions.

## Evaluation

### Examinations

**Spring Mid-term Test:** Scheduled for Thursday, February 13 during class time in the Auditorium. The Spring Mid-term Test will cover material from Chapters 9 – 12 and the corresponding classes.

**Final Examination:** Scheduled during the Final Examination Period by the Registrar's Office. The final examination is based on Chapters 13 – 17 and the corresponding classes.

The Mid-term Test and Final Examination will have questions in different formats including 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 value, marks for intermediate steps may be available; hence it is important that you show all work.

The Mid-term Test and Final Examination are closed book. All 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. Please note that you cannot use your cell phone as a calculator in a test or exam.

### Assignments

Twenty percent (20%) of your mark comes from a series of short assignments. There are **five** assignments and you need to submit **four** out of the five. It is your choice which four you submit. If you submit more than four assignments, the marks from your best four will be used to calculate your total assignment mark. Each assignment is worth 5% of your course 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 should be submitted in class on the due date.

**Late Assignments:** There is a per day penalty for assignments submitted late. The late is penalty is 20% per day late. Assignments submitted after 4:00 pm on the due date will be considered late and a 20% late penalty will be applied. Assignments 5 or more days late will not be accepted and will given a grade of 0.

<i>Assignment</i>	<i>Topic</i>	<i>Due</i>
1	Independent Samples <i>t</i> -Test	Jan. 23
2	Related Samples <i>t</i> -Test	Feb. 4
3	Repeated Measures ANOVA	Mar. 5
4	Two Factor ANOVA	Mar. 18
5	Correlation and Regression	Mar. 31

Evaluation Breakdown:

<b>Component</b>	<b>Weight</b>	<b>Date/ Deadline</b>	<b>Learning Outcome</b>	<b>Brescia Competencies</b>
<b>Assignments (4 x 5%)</b>	20%	See above	1, 3, 4, 5	1, 2, 3
<b>Midterm Exam (Auditorium)</b>	40%	Feb. 13	1, 2, 3, 4, 5	1, 2, 3
<b>Final Exam</b>	40%	TBA	1, 3, 4, 5	1, 2, 3

### Academic Accommodation

For course components worth 10% or more of the total course grade, please see the Academic Policies and Regulations section at the end of this course outline or consult the Academic Calendar.

For course components worth less than 10% of the total course grade, documentation is not required. Whenever possible students should provide notification in advance of due dates or absence. If advance notification is not possible, the course instructor should be contacted within two business days.

## Course Content

Class	Date	Description	Readings <sup>1</sup>
<b>1</b>	Jan. 7	Opening Class, Statistics Review	
<b>2, 3</b>	9, 14	Introduction to the <i>t</i> -Test	9
<b>4, 5</b>	16, 21	Independent Samples <i>t</i> -Test	10
<b>6, 7</b>	23, 28	<i>t</i> -Test for Related Samples	11
<b>8</b>	30	<i>t</i> -Test: Review	
<b>9, 10, 11</b>	Feb. 4, 6, 11	Introduction to ANOVA	12
<b>12</b>	13	<i>Mid-term test - AUD</i>	9 – 12
	18, 20	<i>Reading Week</i>	
<b>13, 14</b>	25, 27	Repeated Measures ANOVA	13
<b>15</b>	Mar. 3	Repeated Measures ANOVA, 2 Factor ANOVA	13, 14
<b>16, 17</b>	5, 10	2 Factor ANOVA	14
<b>18, 19, 20</b>	12, 17, 19	Correlation	15
<b>21, 22</b>	24, 26	Regression	16
<b>23</b>	31	Chi-Square and Non-parametric Tests	17
<b>24</b>	Apr. 2	Last Class	

<sup>1</sup> Readings refers to chapters in Gravetter and Wallnau (2017)

Topics will be covered in the order given above. *Approximate* class dates are listed so that you can keep up with the readings and course expectations.

## 1. POLICY REGARDING ACADEMIC ACCOMMODATION

The complete policy regarding [Accommodation for Illness - Undergraduate Students](http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_12) can be found at [http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page\\_12](http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_12).

Students who have long-term or chronic medical conditions which may impede their ability to complete academic responsibilities should seek Academic Accommodation through Student Accessibility Services ([http://www.westerncalendar.uwo.ca/PolicyPages.cfm?PolicyCategoryID=1&Command=showCategory&SelectedCalendar=Live&ArchiveID=#Page\\_10](http://www.westerncalendar.uwo.ca/PolicyPages.cfm?PolicyCategoryID=1&Command=showCategory&SelectedCalendar=Live&ArchiveID=#Page_10)).

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.

Students who experience an illness or extenuating circumstance sufficiently severe to temporarily render them unable to meet academic requirements may submit a request for academic consideration through the following routes:

1. Submitting a **Self-Reported Absence** form provided that the conditions for submission are met;
2. For medical absences, submitting a **Student Medical Certificate (SMC)** signed by a licensed medical or mental health practitioner;
3. For non-medical absences, submitting **appropriate documentation** (e.g., obituary, police report, accident report, court order, etc.) to their Academic Advisor. Students are encouraged to contact their Academic Advisor to clarify what documentation is acceptable.

### Requests for Academic Consideration Using the Self-Reported Absence Portal

Students who experience an unexpected illness or injury or an extenuating circumstance of 48 hours or less that is sufficiently severe to render them unable to meet academic requirements should self-declare using the online Self-Reported Absence portal. This option should be used in situations where the student expects to resume academic responsibilities within 48 hours. Note that the excused absence includes all courses and academic requirements within the up to 48 hours, it is not intended to provide an excused absence from a single course while students fulfill their academic responsibilities in other courses during that time.

The following conditions are in place for self-reporting of medical or extenuating circumstances:

1. Students will be allowed **a maximum of two self-reported absences** between September and April and one self-reported absence between May and August;
2. The duration of the absence will be for a maximum of 48 hours from the time the Self-Reported Absence form is completed through the online portal, or from 8:30 am the following morning if the form is submitted after 4:30 pm;
3. The excused absence will terminate prior to the end of the 48 hour period if the student undertakes significant academic responsibilities (writes a test, submits a paper) during that time;
4. Self-reported absences will **not** be allowed for scheduled final examinations; midterm examinations scheduled during the December examination period; or for final lab examinations scheduled during the final week of term;
5. Self-report absences may **not** be used for assessments worth more than 30% of any course;
6. Any absences in excess of 48 hours will require students to present a Student Medical Certificate (SMC), or appropriate documentation;
7. Students **must** communicate with their instructors **no later than 24** hours after the end of the period covered by the Self-Reported Absence form to clarify how they will fulfil the academic expectations they may have missed during the absence.

### Request for Academic Consideration for a Medical Absence

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 their academic responsibilities. Minor ailments typically treated by over-the-counter medications will not normally be accommodated.

The following conditions apply for students seeking academic accommodation on medical grounds:

1. Students must submit their Student Medical Certificate (SMC) 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. An SMC can be downloaded from [http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf) ;
2. In cases where there might be an extended absence or serious issue, students should submit their documentation promptly and consult their Academic Advisor for advice during their recovery period;
3. Whenever possible, students who require academic accommodation should provide notification and documentation in advance of due dates, scheduled tests or examinations, and other academic requirements;
4. Students **must** communicate with their instructors **no later than 24 hours** after the end of the period covered by the SMC to clarify how they will fulfil the academic expectations they may have missed during the absence;
5. Appropriate academic accommodation will be determined by the Dean's Office/Academic Advisor in consultation with the course instructor(s). Academic accommodation may include extension of deadlines, waiver of attendance requirements, arranging Special Exams (make-ups), re-weighting course requirements, or granting late withdrawal without academic penalty.

The [full policy on requesting accommodation due to illness](http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_12) can be viewed at:

[http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page\\_12](http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_12)

## 2. ACADEMIC CONCERNS

If you feel that you have a medical or personal challenge 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 are not normally considered.

If you think that you are too far behind to catch up or that your work load is not manageable, you should consult your Academic Advisor. If you consider reducing your workload by dropping one or more courses, this must be done by the appropriate deadlines; please refer to the [Registrar's website](http://brescia.uwo.ca/academics/registrar-services/), <http://brescia.uwo.ca/academics/registrar-services/> or the list of official sessional dates in the Academic Calendar (<http://www.westerncalendar.uwo.ca/SessionalDates.cfm?SelectedCalendar=Live&ArchiveID=>).

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.*

## 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 and warranted.

It is important to note that the Academic 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/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=5&SelectedCalendar=Live&ArchiveID=#SubHeading\\_68](http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=5&SelectedCalendar=Live&ArchiveID=#SubHeading_68) ).

#### **4. SCHOLASTIC OFFENCES**

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence at:

[http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page\\_20](http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_20).

Students are responsible for understanding the nature of and avoiding the occurrence of plagiarism and other academic offences. 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 Scholastic Discipline for Undergraduate Students in the Academic Calendar.

If you are in doubt about whether what you are doing is inappropriate or not, consult your instructor, the Academic Dean's Office, 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.

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 (<http://www.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 is to be sent to the School Chair. If the response of the Chair is considered unsatisfactory to the student, they may then submit a written appeal to the Office of the Dean. If the student is not satisfied with the decision of the Dean, they may appeal to the Senate Review Board Academic (SRBA), if there are sufficient grounds for the appeal and if the matter falls within the jurisdiction of the SRBA. For information on academic appeals consult your Academic Advisor or see the Student Academic Appeals – Undergraduate in the Academic Calendar

[http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page\\_14](http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_14).



Note that final course marks are not official until the Academic Dean has reviewed and signed the final grade report for the course. If course marks deviate from acceptable and appropriate standards, the Academic Dean may require grades to be adjusted to align them with accepted grading practices.

## 6. PREREQUISITES

Unless you have either the prerequisites for a course or written special permission from the 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).

## 7. SUPPORT

### Support Services

The Brescia University College Registrar's website, with a link to Academic Advisors, is at <http://brescia.uwo.ca/academics/registrar-services/>. Students can access supports through Brescia's Student Life Centre (<http://brescia.uwo.ca/life/student-life/>) and Learning Skills Services at Western (<https://www.uwo.ca/sdc/learning/>)

### Mental Health and Wellness

Students may experience a range of issues that can cause barriers to your learning, such as increased anxiety, feeling overwhelmed, feeling down or lost, difficulty concentrating and/or lack of motivation. Services are available to assist you with addressing these and other concerns you may be experiencing. You can obtain information about how to obtain help for yourself or others through **Mental Health & Wellness at Brescia** (<http://brescia.uwo.ca/life/mental-health-wellness/>) and **Health and Wellness at Western**, [http://uwo.ca/health/mental\\_wellbeing/index.html](http://uwo.ca/health/mental_wellbeing/index.html).

### Sexual Violence

All members of the Brescia University College community have a right to work and study in an environment that is free from any form of sexual violence. Brescia University College recognizes that the prevention of, and response to, Sexual Violence is of particular importance in the university environment. Sexual Violence is strictly prohibited and unacceptable and will not be tolerated. Brescia is committed to preventing Sexual Violence and creating a safe space for anyone in the Brescia community who has experienced Sexual Violence.

If you or someone you know has experienced any form of Sexual Violence, you may access resources at <http://brescia.uwo.ca/life/sexual-violence/>.

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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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