

82:250 – FUNDAMENTALS OF PSYCHOLOGICAL RESEARCH I – A01

Fall Semester: September 8th – December 8th 2021
Lectures: Mon, Wed, and Fri: 1:40pm – 2:30pm
Labs: Thursdays: 1:40pm – 3:40pm

Instructor: Nicholas Watier, PhD
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Format: Lectures Conducted Through Zoom; Labs Take-Home
Moodle for all course announcements, grades, assignments, lab reports, and lecture recordings (moodle.brandonu.ca)

Office hours: I am available by appointment

Course Description (from the course calendar): Examination of basic theoretical, methodological and statistical issues involved in data generation and analysis in psychology. Topics will include selected measurement techniques, characteristics of problems, hypothesis, and variables as they relate to systematic observational techniques, experimental and correlational designs. Descriptive statistical procedures will be dealt with in conjunction with the substantive characteristics of the different designs. (Required for all Psychology Majors and normally to be taken during the second year of the student's program).

Course Description (from the perspective of the instructor): Psychology as a discipline is faced with a herculean task: understanding how a mind works. Unfortunately, minds are not directly observable. How can we come to understand and know something that cannot be observed? For over millennia, philosophers, scientists, doctors, and laymen have wrestled with this question, and have developed some ingenious solutions to it. The primary goal of this course is to give you the opportunity to join in the fun. This course will provide an introductory overview of research methods for studying the human mind. We'll begin by learning how to distinguish between scientific from pseudoscientific claims. Afterwards, we'll discuss various research methods and learn how to conduct an experiment. Specific techniques for describing, visualizing, and interpreting psychological data will then be examined in detail. The secondary goals of this course involve: 1) Preparing you for advanced courses in psychology; and 2) Fostering critical thinking and general intellectual skills. These goals will be facilitated by exposing you to various research problems and prompting you to propose solutions to these problems. **Wild speculation is encouraged.** Emphasis will be placed on conceptual rather than computational understanding.

Prerequisite: 82:160 and 82:161

Delivery: The course will rely on a combination of on-line synchronous and blended delivery. Live lectures will be conducted through Zoom during the regularly scheduled class times. While I plan to record the lectures and post them on Moodle, it is expected that students will be present during the live lectures.

The labs will rely on a blended delivery format. Instructions and questions will be posted on Moodle on each Thursday, beginning September 16th. Responses to the labs must be submitted in Moodle on the following Monday by midnight, beginning September 20th. I will be available through Zoom during the lab period on Thursdays from 1:40 to 3:40.

Textbook: While a textbook is not required for this course, the following textbook is recommended: Gravetter, F.J., Wallnau, L.B., Forzano, L.B., & Witnauer, J.E. (2020). *Essentials of Statistics for the Behavioral Sciences (10th Ed)*. Belmont, CA: Wadsworth. If you have access to an earlier edition, feel free to use it. If you have another statistics textbook that suits your learning style and overlaps with the content

of this textbook, you can use it. Past students have done well in the course without the textbook, whereas others have indicated that the textbook was critical in obtaining an ‘A’ grade. I personally think that the practice questions in the textbook are alone worth the cost.

The first lecture topic will cover material that is not included in the textbook. As a result, I’ve posted optional readings to supplement this topic on Moodle. The course outline on the next page lists each lecture topic with its associated chapter in the textbook.

Evaluation: Nine laboratory reports, one journal article summary, one data analysis assignment, and one final exam. Each lab report is worth 2% of your final grade. The journal article summary is worth 20%, the data analysis assignment is worth 22%, the and the final exam is worth 40%.

Only under extraordinary conditions, such as illness, bereavement, or religion, will you be allowed to schedule an extension for an evaluation item. **Documentation is required in order to schedule an extension.** If no documentation is provided, you will receive a grade of zero. **If you are unable to submit an evaluation item, you must notify me prior to the due date, otherwise you will receive a zero.**

Evaluation Item	Course Material that the Item will Cover	Due Date	Proportion of Final Grade
Journal Article Summary	Topic: 2	October 15 th	20%
Data Analysis Assignment	Topics: 2 to 10	November 15 th	22%
Lab Reports	Labs: 1 to 9	Mondays by Midnight	18%
Final Exam	Everything	December 20 th	40%

Content: The course is structured into four parts. The first, which will only last for about a week or so, will focus on philosophy of science. We will try to determine criteria for distinguishing between science and pseudoscience. The second part, which will last until the Thanksgiving break, will focus on families of research designs, how to design an experiment, and using numbers to make measurements. The third part focuses on descriptive statistics. It is at this point where we will gently introduce mathematics to the course. I anticipate that the previous sentence elicited a state of anxiety for some of you. Nearly a century of research into anxiety has revealed that the single most effective strategy for overcoming anxiety is to willingly confront the thing that worries you. This part of the course is structured to help you do just that: recognize that you have the ability to understand formal and technical concepts. The third part of the course will span from the Thanksgiving Break to the Fall Reading Week. The final part of the course will focus on inferential statistics, and will last from the Fall Reading Week to the end of the semester.

Labs: The labs are intended to develop fundamental skills in research, critical thinking, and data analysis in psychology. The contents of the first few labs are geared towards getting you started on the Journal Article Summary assignment. The remaining labs will concentrate on research designs, data analysis, and fostering an appreciation for formal languages (i.e. mathematics). These labs will help prepare you for the Data Analysis assignment.

Final Exam: The final exam is take-home and will involve a series of short-answer questions that cover all of the content in the course. Review classes will be held before the final exam. Plan accordingly. **I encourage you to ask any questions you want during the review.**

Journal Article Summary: This assignment is a 2-page double-spaced summary of a peer-reviewed journal article in psychology. Each student has been randomly assigned to one pre-selected article. The assignment

involves obtaining the article from the library, and summarizing it according to specific guidelines. **A detailed description of the assignment, the articles that students have been assigned, and a grading rubric is posted on Moodle.**

Data Analysis Assignment: Each study will be randomly assigned to read a particular research scenario, and then answer questions and analyze data pertaining to the scenario. The questions in the assignment will be similar to those presented in the labs and during the lectures. The assignment will be available on Moodle around November 1st, and responses to the questions are to be submitted through Moodle.

Course Outline (approximate temporal sequences of Lectures and Labs)

Topic #	Topic Title	Recommended Reading
1	Science and Pseudoscience	Goodwin (2010); Lillienfeld, 1998
2	Families of Research Designs and Research Methods	Chapter 1
3	Scales of Measurement	Chapter 1
4	The Math Toolbox	None
5	Introduction to Statistics	Chapter 1... again
6	Measures of Central Tendency	Chapter 3
7	Measures of Variability	Chapter 4
8	Visualizing Data	Chapter 2
9	Variability of Sample Means	None
10	Z-scores	Chapter 5
11	The Normal Distribution	Chapter 6
12	The Distribution of Sample Means	Chapter 7
13	Introduction to Inferential Statistics	Chapter 8
14	Null Hypothesis Testing	Chapter 8

Lab #	Lab Title
1	Using Library Database to Find Journal Articles
2	APA Style
3	Identifying Variables and Research Designs
4	Identifying Variables in Complex Research Designs
5	Scales of Measurement
6	How to use Descriptive Statistics
7	Visualizing Data and Descriptive Statistics
8	How to Use Z-scores and the Normal Distribution
9	How to use the Distribution of Sample Means

How to Succeed: Think, speculate, discuss, attend the live lectures, read a textbook, complete the practice questions at the end of the textbook, **practice, practice, practice, practice, ask questions, ask questions, ask questions, ask questions**, give yourself plenty of time to complete the labs assignments, and most of all, practice and ask questions. Statistics is a hierarchically organized and cumulative discipline. If you don't grasp the basics (i.e. mean, variability, standardization, inference using a normal curve), then the more complex topics will seem impossible. Constantly working on practice problems and reflecting on your understanding is crucial. If I do a poor job of explaining something, tell me. If you don't quite fully understand something, ask a question. If I can't answer the question during the live lectures, arrange to meet with me to go through it in more detail. This is especially important once we begin statistics. Most

statistical concepts build on antecedent statistical concepts; consequently, it is critical that you pay attention and consistently reflect on your understanding. **I strongly encourage you to complete the practice questions at the end of the textbook.** If you can complete those questions and you understand the answers, then the labs and exam will be much easier to complete.

Calculator: A scientific calculator would be helpful for this course. Some questions on the labs and exam require calculations that would be tedious and time consuming to do by hand. Some of the lectures will require calculations to be completed during the lecture.

Mathematics: Appendix A of the textbook contains an excellent mathematics review. Throughout the course you will be required to know the order of operations, and how to use fractions, decimals, proportions, exponents, roots, and algebra to solve linear equations with one unknown (e.g. $2x = 6$, what is x ?)

Attendance: All of you are autonomous, independent, and capable of making your own decisions as to how you should spend your time and money, but remember this: You paid approximately 500\$ for this course, and not only will you learn something, but you might actually enjoy it as well, so I encourage you to attend the live lectures.

Accessibility Services: Brandon University values diversity and inclusion, recognizing disability as an aspect of diversity. Our shared goal is to create learning environments that are accessible, equitable, and inclusive for all students. The Student Accessibility Services (SAS) office works with students who have permanent, chronic, or temporary disabilities. SAS will provide and/or arrange reasonable accommodations. If you have, or think you may have, a disability (e.g. mental health, attentional, learning, vision, hearing, physical, medical, or temporary), you are invited to contact Student Accessibility Services to arrange confidential discussion at (204) 727-9759. If you are registered with SAS and have a letter requesting accommodations, you are encouraged to contact the instructor early in the term to discuss the accommodations outline in your letter. Additional information is available at the Student Accessibility Services website.

Psychology Department Statements Regarding Rewrites & Waiving Pre-Requisites:

The Psychology Department does not permit individual student rewrites of any exams (or any other alternate form of assessment).

The Psychology Department will not waive prerequisites unless the student can display sufficient background knowledge and/or experience. The student must provide the request to the department in writing for approval with appended documentation.

Letter Grade Equivalents:

A+ 90-100%	B+ 75-79%	C+ 61-64%	D 50-53%
A 85-89%	B 70-74%	C 57-60%	F Below 50%
A- 80-84%	B- 65-69%	C- 54-56%	

Academic Integrity: Academic fraud will not be tolerated. Academic fraud includes, but is not limited to: plagiarism, cheating, submitting assignments from other courses, and falsifying research data. It is very easy to search for a sentence in Google to see if a student copied from another source. When in doubt, cite and reference a source.

As stated in the Senate Policy on Academic Integrity (<https://www.brandonu.ca/senate-office/senate-policies/>) , students that are suspected of departing from academic integrity will have a hold placed on their course withdrawal eligibility, meet with the professor to determine student's responsibility for departure, and if the student was deemed responsible, face sanctions from the Dean, including: a grade of zero on the assignment, a grade of F-AD in the course, or expulsion from the university.