

PSYC*3290, Course Outline: Fall 2023

General Information

Course Title: Statistical Analysis in Psychology

Course Description:

This course focuses on training students in the quantitative analysis and communications skills needed to become a researcher in psychology. Students conduct a correlation-based meta-analysis to help them concretely understand sampling distributions and the difficulties associated with obtaining study results that replicate. This meta-analytic foundation is then leveraged to teach traditional psychological analysis techniques (e.g., t-test, analysis of variance, and bi-variate/multiple regression) with an emphasis on maximizing factors that increase the probability of study findings that replicate. The value of interpreting results using effect sizes with confidence intervals is discussed and the logic of null-hypothesis testing is briefly reviewed.

Credit Weight: 0.50

Restriction(s): PSYC*2040, STAT*2050. Restricted to students in BAH.PSYC, BAH.PSYC:C, BSCH.NEUR, BSCH.NEUR:C and a minor in NEUR with a minimum cumulative average of 70% in all Psychology course attempts.

Requisites: 2.50 credits in Psychology including PSYC*2360 - Must be completed prior to taking this course.

Academic Department (or campus): Department of Psychology

Semester Offering: F23

Class Schedule and Location: Monday & Wednesday, 8:30-9:20 AM, RICH 2520

Instructor Information

Instructor Name: Danny M. Pincivero, PhD

Instructor Email: dpinci@uoguelph.ca

Office hours: Appointment by email.

- **When sending an email to the course instructor or TA's, make sure to type the course code (i.e., PSYC 3290) into the Subject heading of the email and you MUST use your University of Guelph issued email address. Email messages not adhering to these conditions will not be read and will be deleted.**
- **Emails will be read and, replied to, typically during the regular weekdays (Mon-Fri, 9:00 AM to 5:00 PM). Note that not all email communications to the instructor and teaching assistants may receive a reply.**

Graduate Teaching Assistant and LAB Information

Lab 01:	Friday	10:30-12:20	MCKN 028	Niyatee Narkar (nnarkar@uoguelph.ca)
Lab 02:	Friday	12:30-2:20	MCKN 028	Davin Peart (dpeart@uoguelph.ca)
Lab 03:	Wednesday	2:30-4:20	MCKN 028	Ralitza Dimova (rdimova@uoguelph.ca)
Lab 04:	Wednesday	12:30-2:20	MCKN 028	Skylar Laursen (slaursen@uoguelph.ca)
Lab 05:	Friday	8:30-10:20	MCKN 028	Jonathan Jones (dossantj@uoguelph.ca)
Lab 06:	Friday	2:30-4:20	MCKN 028	Jonathan Jones (dossantj@uoguelph.ca)

Course Content

Specific Learning Outcomes:

A. Critical and Creative Thinking

1. Depth and Breadth of Knowledge
 - Describe core concepts in the application of data analysis and statistics.
2. Inquiry and Analysis
 - Formulate questions about psychology. Know how to determine a valid approach to the analysis of quantitative data.
 - Evaluate hypotheses based on numerical data
 - Recognize the importance of supporting statements with evidence.
3. Problem Solving
 - Identify issues and create a plan to address the problem using knowledge of data analysis and statistics.

B. Literacy

1. Methodological literacy: The ability to understand, evaluate, and apply appropriate methodologies for rigorous psychological science.
2. Quantitative literacy
 - Understand and demonstrate the use and interpretation of numerical data.
3. Visual literacy:
 - Create and interpret graphs and tables.

C. Communication

1. Reading Comprehension (e.g., reading original research articles)
 - Understand sophisticated theoretical and empirical writing in psychology.
2. Listening skills (a component of Oral communication).
 - Summarize information in a clear and concise way.
3. Oral and Written Communication
 - Present ideas in a logical order, using concrete examples including graphs and tables.
 - Apply written communications with the appropriate vocabulary and presenting statistical results in the technical format following American Psychological Association guidelines.

D. Personal and ethical behaviour

1. Ethical issues in research
 - Understand ethical principles in conducting research.
2. Personal organization/ time management
 - Recognize the importance of planning for completion of tasks.
 - Deal with intense time pressures, prioritize and complete tasks to schedule.
 - Demonstrate personal accountability and responsibility.

LECTURE SCHEDULE AND RELEVANT DATES

DATE	LECTURE TOPIC AND ACTIVITIES	READINGS
WEEK 1 Sept 7-8	University of Guelph classes commence (Thursday September 7) No scheduled labs.	
WEEK 2 September 11-15	<u>PSYC 3290: First day of class (Monday September 11)</u> Introduction to research and statistics, descriptive statistics First week of labs. Last day to add F23 courses.	Chapters 1-3
WEEK 3 September 18-22	Statistical inference, NHST. <ul style="list-style-type: none">• ONLINE QUIZ 1 OPENS (Wed Sept 20, week 2 content).	Chapters 4-5
WEEK 4 September 25-29	Comparing 2 means: the z-test and t-test. <ul style="list-style-type: none">• ONLINE QUIZ 2 OPENS (Wed Sept 27, week 3 content).	Chapters 6-8
WEEK 5 October 2-6	Comparing 2 means: the t-test.	Chapters 6-8
WEEK 6 October 9-13	Comparing more than 2 means: ANOVA. Monday October 9: Holiday -- No Classes Scheduled -- Classes rescheduled to Friday, December 1. Tuesday October 10: Fall Study Break Day -- No Classes Scheduled -- classes rescheduled to Thursday, November 30. Wednesday October 11: Fall Break ends and classes resume. <ul style="list-style-type: none">• ONLINE QUIZ 3 OPENS (Wed Oct 11, weeks 4-5 content)	Chapters 14-15
WEEK 7 October 16-20	Comparing more than 2 means: ANOVA <u>MIDTERM EXAMINATION: Wednesday October 18.</u>	Chapters 14-15
WEEK 8 October 23-27	Comparing more than 2 means: ANOVA	Chapters 14-15
WEEK 9 October 30 – November 3	Comparing more than 2 means: ANOVA <ul style="list-style-type: none">• ONLINE QUIZ 4 OPENS (Wed Nov 1, weeks 6-9 content)	Chapters 14-15
WEEK 10 November 6-10	Correlation and regression analysis.	Chapters 11-12

WEEK 11 November 13-17	Correlation and regression analysis.	Chapters 11-12
WEEK 12 November 20-24	Correlation and regression analysis. <ul style="list-style-type: none"> • ONLINE QUIZ 5 OPENS (Wed Nov 22, weeks 10-12 content) 	Chapters 11-12
WEEK 13 November 27 – December 1	Correlation and regression analysis. <p>Wednesday November 29: Last day for regularly scheduled classes.</p> <p>Thursday November 30: Classes rescheduled from Tuesday, October 10, Tuesday schedule in effect.</p> <p>Friday December 1: Review for final exam.</p> <p>Classes conclude.....<u>PSYC 3290 last scheduled class.</u></p> <p>Classes rescheduled from Monday, October 9, Monday schedule in effect.</p> <p>Last day to drop F23 one-semester courses and S23/F23 two-semester courses.</p> <p>Last day to apply online for the Credit/No Credit grading option for eligible F23 elective courses.</p>	Chapters 11-12
December 4-15	University of Guelph final examination period <p>PSYC 3290 FINAL EXAM – Friday December 15, 7:00 PM (2 hrs), location TBA.</p>	

NOTE: The instructor reserves the right to modify the schedule of topics above. Every effort will be made to adhere to this schedule as close as possible.

LAB SCHEDULE AND RELEVANT DATES

DATE	LAB TOPIC AND ACTIVITIES	ACTIVITY
WEEK 1 Sept 7-8	University of Guelph classes commence (Thursday September 7) No scheduled labs.	
WEEK 2 September 11-15	Introduction to RStudio. Last day to add F23 courses.	
WEEK 3 September 18-22	RStudio functions (producing graphs, reading in data files, etc.).	
WEEK 4 September 25-29	The t-test.	
WEEK 5 October 2-6	The t-test.	Lab 1 due: t-test 1
WEEK 6 October 9-13	Analysis of variance 1: single-factor (way). Monday October 9: Holiday -- No Classes Scheduled -- Classes rescheduled to Friday, December 1. Tuesday October 10: Fall Study Break Day -- No Classes Scheduled -- classes rescheduled to Thursday, November 30. Wednesday October 11: Fall Break ends and classes resume.	Lab 2 due: t-test 2
WEEK 7 October 16-20	Analysis of variance 2: single factor, repeated measures. <u>MIDTERM (Lecture) EXAMINATION: Wednesday October 18.</u>	
WEEK 8 October 23-27	Analysis of variance 3: factorial design, 2 factor (way).	Lab 3 due: ANOVA 1
WEEK 9 October 30 – November 3	Simple correlation, correlation matrix.	Lab 4 due: ANOVA 2
WEEK 10 November 6-10	Regression analysis (single predictor).	Lab 5 due: ANOVA 3
WEEK 11 November 13-17	Multiple regression analysis.	Lab 6 due: Correlation
WEEK 12 November 20-24	Multiple regression analysis.	Lab 7 due: Regression 1

<p>WEEK 13 November 27 – December 1</p>	<p>Final week of labs: Review and assistance.</p> <p>Wednesday November 29: Last day for regularly scheduled classes.</p> <p>Thursday November 30: Classes rescheduled from Tuesday, October 10, Tuesday schedule in effect.</p> <p>Friday December 1: Review for final exam (Monday schedule). Classes conclude.....<u>PSYC 3290 last scheduled class.</u></p> <p>Classes rescheduled from Monday, October 9, Monday schedule in effect.</p> <p>Last day to drop F23 one-semester courses and S23/F23 two-semester courses.</p> <p>Last day to apply online for the Credit/No Credit grading option for eligible F23 elective courses.</p>	<p>Lab 8 due: Regression 2</p>
<p>December 4-15</p>	<p>University of Guelph final examination period</p>	

NOTE: The instructor reserves the right to modify the schedule of topics above. Every effort will be made to adhere to this schedule as close as possible.

Course Assignments and Tests:

Assessment	Due Date	Contribution to Final Grade (%)	Learning Outcomes Assessed
Online quizzes	Refer to course schedule.	2% each x 5 = 10%	A1-3; B1-3; C1-3; D1-2
Midterm Exam	Wednesday Oct 18 (in-person). Weeks 1-6 content.	25%	A1-3; B1-2; C1-3; D2
Lab assignments	Refer to course schedule.	5% x 7 = 35% (lowest lab grade dropped).	A1-3; B1-3; C1-2; D2
Final Exam	Friday Dec 15 (in-person). Weeks 8-13 content.	25%	A1-3; B1-3; C1-3; D1-2
Lab attendance	Refer to lab schedule.	5%	A 1-3; B1-3; C 1-3; D 1-2

NOTE: There will be NO extra credit opportunities for course and non-course related activities. Travel for any reason is NOT a justifiable basis for a missed/incomplete exam/quizz or lab assignment in the course.

Course Resources

Required Text:

Cumming, G., & Calin-Jageman, R. (2017). *Introduction to the New Statistics: Estimation, Open Science, and Beyond*. New York: Routledge: Taylor and Francis Group.

ISBN: 978-1-138-82551-2 (hbk)

ISBN: 978-1-138-82552-9 (pbk)

ISBN: 978-1-315-70860-7 (ebk)

Publisher/book website: [Introduction to the New Statistics: Estimation, Open Science, and Beyond \(routledge.com\)](https://www.routledge.com/Introduction-to-the-New-Statistics-Estimation-Open-Science-and-Beyond)

Other Resources:

Additional resources will be provided on Courselink.

Course Requirements

LAB ASSIGNMENTS (35% of final grade)

There will be a total of 8 lab based assignments that will involve the analysis of primary data (which will be provided on Courselink) with the use of R-software. The lowest grade of the 8 lab assignment submissions will be dropped from the overall lab assignment grade making each of the 7 remaining assignments worth 5% of the final grade. The deadline to submit each lab assignment is indicated on the lab schedule. Assignments submitted AFTER the posted deadline will receive a 10% per day deduction up to a maximum of 5 calendar days; after this 5 day window, assignments will not be accepted and will receive a grade of 0. Information on assignment formatting is provided on Courselink.

ONLINE QUIZZES (2% each x 5 = 10% of final grade)

- The online quizzes will be made available on Courselink and will be opened on the **Wednesday** at **9:30 AM** of the scheduled week and will remain open through **Monday**

of the following week and will close at **8:30 AM**. All content that will be addressed in the online quiz questions will be drawn entirely from lecture material only.

- **IMPORTANT NOTE:** All the online quizzes are to be completed during the allocated time of availability in CourseLink. Missed quizzes **CANNOT** be made up and under no circumstances will the percent value of a missed quiz be shifted to any other quiz, assignment, or exam. It is the student's responsibility to ensure that they have adequate computer/internet resources in place at the time they intend on completing the quiz.

LAB ATTENDANCE (5% of final grade)

Attendance at the lab is **REQUIRED** and will be recorded by the attending teaching assistant. The grading of lab attendance will be proportional to the total number of labs attended. All students will be permitted 2 unexcused lab absences that will not affect the lab grading. Any absences beyond 2 will require consultation with the teaching assistant and/or course instructor to assess extenuating circumstances. As 12 lab sessions have been scheduled the point allocation will be based on 10 lab (12 minus 2 non-excused absences) according to the following table:

Labs attended	Point allocation	Labs attended	Point allocation
10	5	4	2
9	4.5	3	1.5
8	4	2	1
7	3.5	1	0.5
6	3	0	0
5	2.5		

MIDTERM EXAMINATION (25% of final grade)

The midterm exam (**Wednesday October 18**) will be comprised of multiple-choice, calculation-type, and/or short answer questions. The midterm exam is an in-person examination taken during the regularly scheduled class period and classroom and may require hand-written responses to questions on provided paper documents. Students will require the use of a calculator; the calculator on a cell phone will **NOT** be permitted during the exam. The midterm will cover material from weeks 1 to 6. Further details on the midterm exam will be provided on CourseLink.

FINAL EXAMINATION (25% of final grade)

The final exam (TBA) will be comprised of multiple-choice, calculation-type, and/or short-answer questions. The questions will test material from weeks 8 to 13. The final exam is an in-person examination taken during the Registrar's scheduled time and location and may require hand-written responses to questions on provided paper documents. Students will require the use of a calculator; the calculator on a cell phone will **NOT** be permitted during the exam. Further details on the final exam will be provided on CourseLink.

Respondus lockdown browser may be in effect.

Respondus LockDown Browser is a locked browser for taking quizzes in CourseLink. It will be required to take the midterms and final exam. It prevents you from printing and copying; using other operating software; using search engines (e.g., going to another URL); communicating via instant messaging; and it blocks non-web-related software (e.g., Adobe PDF, Microsoft Word).

Respondus Monitor is a companion application for LockDown Browser that uses webcam and video technology to ensure academic integrity during online exams. The software captures video during the exam and allows the instructor to review the video once the exam is completed. In order to use Respondus LockDown Browser and Monitor, you must meet the following technical requirements so that you can take the practice test and midterm exam:

1. Operating Systems: Windows 10, 8, 7; Mac OS X 10.10 or higher.
2. Memory: Windows 2 GB RAM; Mac 512 MB RAM.
3. For Mac users: Safari must function properly on the computer.
4. Mac users must have Adobe Flash Player installed to Safari, even if a different browser is normally used.
5. Functioning webcam and microphone. The webcam and microphone can be built into your computer or can be the type that plugs in with a USB cable. (You will be required to do an environment scan of your room, so please ensure you can move your computer, laptop or webcam for this scan.)
6. A broadband Internet connection. It is recommended that you access the Internet via a wired connection.

If you have any concerns about meeting system requirements, contact CourseLink Support. They will work with you to find alternative solutions or make alternative arrangements.

- This course requires the use of Respondus LockDown Browser and Monitor (webcam) for proctoring within CourseLink. You must **download and install LockDown Browser and Monitor** to complete the practice test (if provided) and course exam(s). The purpose of the practice test is to ensure that Respondus LockDown Browser and Monitor is set up properly and that you are comfortable using the software.
- Respondus LockDown Browser is a locked browser connected to the Quizzes tool in CourseLink. It prevents you from printing and copying, using other operating software, using search engines (e.g., going to another URL), communicating via instant messaging, and it blocks non-web-related software (e.g., Adobe PDF, Microsoft Word).
- Respondus Monitor is a companion application for LockDown Browser that uses webcam and video technology to ensure academic integrity during online exams. The software captures video during the exam and allows the instructor to review the video once the exam is completed.
- In order to use Respondus LockDown Browser and Monitor, you must meet the **technical requirements**. Visit the Remote Learning website for guidance on **preparing your online exam environment**.
- If you have any concerns about meeting system requirements, contact **CourseLink Support**. They will work with you to find alternative solutions or make alternative arrangements.

Effective time management is critical. To succeed in this course, it is essential that you keep up with the readings, weekly learning curve, quiz and research in action activities. You should take a disciplined approach in planning to complete the graded assignments. You are encouraged to ask questions when you are struggling.

Late or missed deadlines:

Midterm. If a student misses the midterm exam due to medical, psychological or compassionate reasons, then the midterm may be re-scheduled. If a student fails to provide appropriate grounds for academic consideration, the grade on the missed midterm will be 0.

Final exam. Students who do not write the final examination should follow the University's procedures for requesting academic consideration (see below).

Course Policy on Group Work:

Each student is expected to complete all assignments on their own. If there is evidence that students are collaborating inappropriately (i.e., sharing computer analysis outputs) while completing assessments, then those cases will be dealt with as per the regulations on Academic Misconduct. Students are certainly permitted and encouraged to work with each other outside of scheduled classes but the submissions must be the student's own work.

Course Policy regarding use of electronic devices and recording of lectures:

Electronic recording of classes is expressly forbidden without consent of the instructor. When recordings are permitted, they are solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor. Similarly, any material created by the course instructor is intended for those enrolled in this course solely. Under no circumstances are you allowed to disseminate course materials to external parties.

Student Rights and Responsibilities when Learning Online: ONLINE BEHAVIOUR

According to the University Secretariat, students have a responsibility to help support community members' access to the tools they need to engage in their learning and development, both in and outside of the classroom. An example of this type of responsibility is the requirement to abide by the following:

Section 4.3.3. Disruption - to not interfere with the normal functioning of the University, nor to intimidate, interfere with, threaten or otherwise obstruct any activity organized by the University, including classes, or to hinder other members of the University community from being able to carry on their legitimate activities, including their ability to speak or associate with others.

As such, inappropriate online behaviour will not be tolerated. Examples of inappropriate online behaviour include:

- Posting inflammatory messages about your instructor or fellow students
- Using obscene or offensive language online
- Copying or presenting someone else's work as your own
- Adapting information from the Internet without using proper citations or references
- Buying or selling term papers or assignments
- Posting or selling course materials to course notes websites
- Having someone else complete your quiz or completing a quiz for/with another student
- Stating false claims about lost quiz answers or other assignment submissions
- Threatening or harassing a student or instructor online
- Discriminating against fellow students, instructors and/or TAs
- Using the course website to promote profit-driven products or services
- Attempting to compromise the security or functionality of the learning management system
- Sharing your username and password

University Policies

For information on current safety protocols, follow these links: <https://news.uoguelph.ca/return-to-campuses/how-u-of-g-is-preparing-for-your-safe-return/>

<https://news.uoguelph.ca/return-to-campuses/spaces/#ClassroomSpaces>

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives

Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email. This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g., final exam or major assignment).

Academic Consideration

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing, with your name, id#, and e-mail contact. See the academic calendar for information on regulations and procedures for Academic Consideration:

[Academic Consideration, Appeals and Petitions](#)

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community, faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring.

University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection. Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar:

[Academic Misconduct Policy](#)

Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact [Student Accessibility Services](#) as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 54335 or email accessibility@uoguelph.ca or the [Student Accessibility Services Website](#).

Course Evaluation Information

Please refer to the [Course and Instructor Evaluation Website](#) .

Drop date

The last date to drop one-semester courses, without academic penalty, is December 1, 2023. For regulations and procedures for Dropping Courses, see the [Schedule of Dates in the Academic Calendar](#).

Additional Course Information: Turnitin software

Course instructors are allowed to use software to help in detecting plagiarism or unauthorized copying of student assignments. Plagiarism is one of the most common types of academic misconduct on our campus. Plagiarism involves students using the work, ideas and/or the exact wording of other people or sources without giving proper credit to others for the work, ideas and/or words in their papers. Students can unintentionally commit misconduct because they do not know how to reference outside sources properly or because they don't check their work carefully enough before handing it in. Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

In this course, your instructor will be using Turnitin.com to detect possible plagiarism, unauthorized collaboration or copying as part of the ongoing efforts to prevent plagiarism in the College of Social and Applied Human Sciences.

A major benefit of using Turnitin is that students will be able to educate and empower themselves in preventing misconduct. In this course, you may screen your own assignments through Turnitin as many times as you wish before the due date. You will be able to see and print reports that show you exactly where you have properly and improperly referenced the outside sources and materials in your assignment.