

PSYC*2360, Course Outline: Fall 2024

General Information

Course Title: Psychological Methods and Statistics

Course Description:

This course builds on students' understanding of basic psychological research methods and statistics, with an emphasis on designing, interpreting, and communicating research. Topics covered throughout the term may include research ethics, the scientific method, qualitative and quantitative measures, reliability and validity, complex research designs using multiple predictor or independent variables, and the reading and writing of journal articles.

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

- Identify, apply, and evaluate different research methods
- Critically evaluate scientific research
- Conduct a literature search and identify and summarize the relevant literature
- Develop research hypotheses and design a study to test their research hypotheses
- Write a research proposal in APA style (i.e., introduction, method, results)

Credit Weight: 0.50

Academic Department (or campus): Department of Psychology

Semester Offering: F24

Class Schedule and Location:

Thursdays 5:30 – 6:50 pm

THRN 1200

Summary Lecture Slides for each week will be posted Thursdays at noon.

Details are provided in the Lecture Content section below.

Seminars will meet face-to-face at times/locations noted below.

Seminars begin the week of September 16.

Instructor Information

Instructor Name: Harvey H. C. Marmurek, PhD

Instructor Email: hmarmure@uoguelph.ca

Instructor office: 4019 MacKinnon Extension

Office hours: Appointment by email to arrange an online meeting via Teams.

Graduate Teaching Assistant Information **Email @uoguelph.ca**

Seminar 01: Fri	2:30-3:20	ROZH 107	Siobhon-Elora Weber (siobhone)
Seminar 02: Thur	4:30-5:20	MCKN 306	Jennifer Martow (jmartow)
Seminar 03: Wed	12:30-1:20	ROZH 107	Natash Vogel (vogeln)
Seminar 04: Thur	1:30-2:20	MINS 128	Anna Kazatchkova (akazatch)
Seminar 05: Fri	11:30-12:20	MCKN 304	Angelica Nascimento de Oliveira (nascimea)
Seminar 06: Fri	1:30-2:20	ROZH 107	Angelica Nascimento de Oliveira (nascimea)
Seminar 07: Mon	4:30-5:20	ROZH 108	Samantha McGuinness (mcguinns)
Seminar 08: Wed	2:30-3:20	MCKN 305	A. Natasha Nabbijohn (anabbijo)
Seminar 09: Fri	4:30-5:20	ALEX 309	Rachel Eng (engr)
Seminar 10: Mon	10:30-11:20	CRSC 403	Katherine Churey (kchurey)
Seminar 11: Tue	4:30-5:20	MCKN 306	Ella Claridge (eclaridg)
Seminar 12: Tues	1:30-2:20	MINS 101	Mallory Terry (terry)

Seminar Coordinator: Savannah Yerman (syerman@uoguelph.ca)

Course Content

Specific Learning Outcomes:

A. Critical and Creative Thinking

1. Depth and Breadth of Knowledge

- Describe core concepts in the scientific method, research methods and statistics, and indicate how these ideas work together in the scientific method
- Understand and apply key concepts in research methods and statistics as it relates to the scientific method

2. Inquiry and Analysis

- Formulate questions about psychology. Know how to find relevant evidence.
- Evaluate hypotheses based on 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 research methods and statistics

B. Literacy

1. Methodological literacy: The ability to understand, evaluate, and apply appropriate methodologies for rigorous psychological science

- Recognize and describe basic research methodologies (e.g., random assignment, random sampling; qualitative vs. quantitative methods)

2. Quantitative literacy

- Understand the use of numerical data
- Demonstrate the ability to interpret 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).

- Determine the key points in an auditory presentation
- 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
- Talk and write using the appropriate vocabulary, presenting statistical results in the technical format following American Psychological Association guidelines

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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

On successful completion of this course, you will be able to accomplish the following:

- A. Identify and describe key concepts relating to the scientific method, research design, and inferential and descriptive statistics. Apply these concepts when solving problems (Learning outcomes: A1-3; B1-3; C1-2; D2)
- B. Describe the stages involved in scientific reasoning and specify the role and importance of quantification in the scientific method. (Learning outcomes: A1-3; B1-3; C1-3; D2)
- C. Analyze a research question, identifying the relevant measured and manipulated variables. Indicate whether the study is a true experiment, a quasi-experiment, or correlational design and describe the relative strengths and weaknesses of each type of design. Propose a study based on research related to the question. (Learning outcomes: A1-3; B1-2; C1; C3; D1-2)
- D. Identify the independent and dependent variables in a research study. Provide operational definitions of variables. (Learning outcomes: A1-3; B1-2)
- E. Interpret information presented in graphical format (graphs) with an emphasis on statistical interactions. (Learning outcomes: B3)
- F. Explain what hypothesis testing is, indicating its purposes, the processes involved, and the places where error can enter into the process. Indicate the role of probability in hypothesis testing and inferential statistics. (Learning outcomes: A1-3; B1-2; C1-3)

Content and Deadlines:

The table below lists the content of the associated readings from the text, and assignments.

Note that only Quiz assignments are graded.

Lecture Date	Readings: Discovering the Scientist Within (Lewandowski, Ciarocco & Strohmets, 3e)	Due dates for Learning Curve (LC), Quizzes (Q).
Sept. 5	Chapter 1: Psychology as a science	LC1, Q1 Due: Sept. 18
Sept. 12	Chapter 2: The research process Chapter 3: Ethics	LC2, Q2 LC3, Q3 Due: Sept. 18
Sept. 19	Chapter 4: Research designs	LC4, Q4 Due: Sept. 25
Sept. 26	Chapter 5: Qualitative research Chapter 6: Observational research	LC5, Q5 LC6, Q6 Due: Oct. 2
Oct. 3	Chapter 7: Correlational research	LC7, Q7 Due: Oct. 9
Oct. 10	Midterm	
Oct. 17	Chapter 8: Two-group design Plan for research proposal	LC8, Q8 Due: Oct. 23 Due: Oct. 20
Oct. 24	Chapter 9: Multigroup design	LC9, Q9 Due: Oct. 30

Oct. 31	Chapter 10: Within-subjects design	LC10, Q10 Due: Nov. 6
Nov. 7	Chapter 11: Factorial design	LC11, Q11 Due: Nov. 13
Nov. 14	Chapter 12: Mixed design	LC12, Q12 Due: Nov. 20
Nov. 21	Chapter 13: Program evaluation Research Proposal	LC13, Q13 Due: Nov 27 Due: Nov. 24

Final Exam: Friday, December 13, 8:30 -10:30 (Location TBD)

Summary of Course Assignments and Tests:

Assignment or Test	Due Date	Contribution to Final Mark (%)	Learning Outcomes Assessed
Weekly online learning curve and quizzes	Weekly assignments due by 11:59 on Wednesday of the week following the corresponding lecture. Note: Only Quiz grades contribute to course grade	10%	A1-3; B1-3; C1-3; D1-2
Midterm examination	Thursday, October 10 5:30 – 6:50 pm Chapters 1-7	30%	A1-3; B1-2; C1-3; D2
Plan for research proposal	Sunday, October 20	10%	A1-3; B1-3; C1-2; D2
Research proposal	Sunday, November 24	15%	A1-3; B1-3; C1-3; D1-2
Final Exam	Friday, Dec. 13 8:30 – 10:30 Chapters 8 – 13	30%	A1-3; B1-3; C1-3; D1-2
Seminar Reflections	Due in seminar on weeks 2, 3, 5, 6, and 8.	5%	A 1-3; B1-3; C 1-3; D 1-2

Course Resources

Required Text:

Lewandowski, G. W., Ciarocco, N. J., & Strohmets, D. B. (2023). *Discovering the Scientist Within: Research Methods in Psychology. Third Edition*. Worth Publishers, New York.

Note: I strongly advise you NOT to purchase a used copy of the textbook. You are required to complete assignments using Achieve software for which an access code is included with the purchase of a new textbook. You may also purchase a standalone access code that provides access to an e-book version of the textbook.

When you register, use your name as it appears on the University classlist.

Other Resources:

Courselink Website. Summary slides for the assigned chapter readings will be provided.

Achieve software (included with a new text or purchased separately) provides an e-book and learning resources (Learning Curve, Quizzes).

About Achieve PowerPoint slides are available under Content on the course homepage.

The Achieve Course ID is: 6xod3j

Course URL: <https://achieve.macmillanlearning.com/courses/6xod3j>

Course Requirements

Learning Curve, Quizzes (10%)

Learning Curve is an adaptive learning tool. The difficulty of questions is varied as you aim to achieve a mastery level. These should be completed once you have read the assigned chapter and summary slides. The Learning Curve assignments are intended to prepare you for the quiz.

Once you have achieved mastery on Learning Curve, you should attempt the Quiz. **Only quiz grades will count toward the 10% grade. Your best 10 quizzes will count toward that grade. Quizzes that are not completed will receive a grade of 0.**

The deadline for completing the weekly quiz assignments for each chapter is **11:59 pm on the Wednesday** following the corresponding lecture.

The Quiz grades will be available in the Achieve gradebook. The grades will be transferred to the Courselink gradebook during the first week of the Final Examination period.

Seminars

The seminar schedule is posted on CourseLink. Seminars are essential in learning how to develop a research plan and proposal. During the seminars, you will work on the following collaborative learning activities:

- Learn how to conduct a library search for journal articles
- Find out the structure of psychology journal articles
- Create research questions and hypotheses
- Learn how to write an introduction, methods, and results section for a research paper
- Present a summary of your research plan to the seminar group.

Plan for Research Proposal (10%)

Working individually, students will compose a report with three subheadings: Introduction; Methods; References. The Introduction should include a statement about your general topic of interest and a brief research summary. The research summary should identify the variables of interest, the operational definitions for the variables of interest, and your research question and hypothesis. The Methods should describe your participants, recruitment procedures, materials, and procedural operations. The References should contain a summary of three (3) prior studies. Each summary should include what the authors did (i.e., their research question and hypothesis, and the methods used), what the authors found (i.e., the main conclusion as it relates to the hypothesis), and how the article relates to your proposed research study (e.g., provides support for your hypothesis, validates a scale/measure you will be using). Each summary should also provide the identity of the research papers. APA referencing style is not required, but each reference should contain the author's names, year of the article, the article title, and the name of the journal. The maximum number of pages is five (5), double spaced with a font size of 12.

Research Proposal: (15%)

Working individually, students will prepare a research proposal. The proposal should include a Title page, an Introduction, a Method section, a Results section, and a Reference section. An Abstract and Discussion are not required. The Introduction should include a literature review with a minimum of three (3) articles discussed in detail. The articles discussed should be empirical studies, with clear research questions and hypotheses. Review articles can be included to provide additional support for the research question, but do not count towards the required three (3) articles. Any articles focused on scale creation or validation should only be included when operationalizing your variables and in the methods section – they do not count towards the three (3) articles. The introduction should also identify the variables of interest, the operational definitions for the variables of interest, and your research question and hypothesis. The Methods should describe your participants, recruitment procedures, materials, and design (e.g., experimental design; correlation design), and procedural operations. Although the project **will not be conducted**, the Results section should indicate the types of statistical analyses that would be conducted if the experiment had been conducted. The results should support the hypotheses. Expected results may be accompanied by tables or figures. The references should provide the identity of the research papers.

APA guidelines for scientific writing must be followed. The maximum length is ten (10) pages including the list of References, not including the title page.

Seminar Reflections: (5%)

Students will complete reflections at the end of seminar in weeks 2, 3, 5, 6, and 8. Paper copies of the reflections will be provided by the TA and students will submit the hard copy of the reflection at the end of seminar. Reflections will incorporate knowledge from the seminar and help to keep students on track for their Research Plan and Research Proposal assignments.

Midterm (30%)

The midterm exam (Oct. 10) will comprise 50 multiple-choice questions similar to those on the weekly quizzes. The midterm will cover material from chapters 1 to 7.

Final Exam (30%)

The final exam will comprise 50 multiple-choice questions similar to those on the weekly quizzes. The questions will test material from chapters 8 to 13.

Attendance: Regular engagement with the weekly readings and assignments is strongly recommended. The summary slides will closely follow the presentation in the textbook given that many students find the material challenging. My goal is to communicate key concepts in a clear and uncomplicated fashion. Students are expected to attend seminars.

Effective time management is critical. To succeed in this course, it is essential that you keep up with the readings, the weekly learning curve, and quizzes. You should take a disciplined approach in planning to complete the graded assignments. I will post weekly updates reviewing upcoming assignments in an Announcement on the course home page on the day of the class meeting. You are encouraged to ask questions when you are struggling.

Late or missed deadlines:

Plan for research proposal and research proposal. Unless an extension has been granted on medical, psychological, or compassionate grounds, late assignments will receive a penalty of 10% per day up to five days, after which time they will receive a grade of 0. Requests for extensions based on medical, psychological, or compassionate grounds should be made to professor Marmurek. When making your request you must cc your seminar TA and the seminar coordinator (Savannah Yerman).

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).

Page Limits:

Marks will be docked for exceeding the page limit on the research plan and proposal assignments. Papers that exceed the limit by more than ½ page will have the grade reduced by 10% of the assigned grade.

Course Policy on Group Work:

Each student is expected to complete all assignments on their own. If there is evidence that students are collaborating while completing online assessments, then those cases will be dealt with as per the regulations on Academic Misconduct. However, students are encouraged to form study groups in preparation for the graded assessments.

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, appropriate 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-campus/how-u-of-g-is-preparing-for-your-safe-return/>

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

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

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](#)

Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required, however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to make a booking at least 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

More information: www.uoguelph.ca/sas

Academic Misconduct

The [Academic Misconduct Policy](#) is detailed in the Undergraduate Calendar.

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.

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.

Instructors **shall not** determine if academic misconduct has occurred. This is up to the Associate Dean Academic's office. Instructors shall not assign a grade of zero even if they believe that the student has committed some form of academic misconduct (e.g., copied material from a website like CourseHero) on an assignment or exam.

Instructors **can** determine if a student has poorly paraphrased and/or improperly cited material and can provide a grade accordingly as long as this is clearly identified as part of the assessment criteria via a rubric or other assessment tools.

For more information about Academic Integrity resources and how to prevent Academic Misconduct see: <https://csahs.uoguelph.ca/faculty-research/hub-teaching-learning-excellence/academic-integrity>

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 the final day of class. For regulations and procedures for Dropping Courses, see the [Schedule of Dates in the Academic Calendar](#).

Instructors must provide [meaningful and constructive feedback, at minimum 20% of the final course grade, prior to the 40th class day](#). For courses which are of shorter duration, 20% of the final grade must be provided two-thirds of the way through the course.

[Current Undergraduate 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.