

# PSYC\*2360, Course Outline: Winter 2020

## 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 (i.e., introduction, method, results)

**Credit Weight:** 0.50

**Academic Department (or campus):** Department of Psychology

**Semester Offering:** Winter 2020

**Assigned Seminar:** See Web Advisor.

### **Class Schedule and Location:**

Mondays, Wednesdays: 2:30 – 3:20 PM

Alexander Hall (ALEX), Room 200

## Instructor Information

Instructor Name: Harvey H. C. Marmurek, PhD

Instructor Email: hmarmure@uoguelph.ca

Office location and office hours: MacKinnon Extension, Room 4019

Tuesdays, Thursdays 1:00 – 2:00 PM or by appointment

## **Graduate Teaching Assistant Information**

**GTA Coordinator:** TBD

### **Teaching Assistants:**

Seminar 1: M 3:30 - 4:20 MACS 129  
Seminar 2: T 9:30 - 10:20 MINS 037  
Seminar 3: T 10:30 - 11:20 MINS 037  
Seminar 4: W 3:30 - 4:20 MINS 037  
Seminar 5: W 4:30 - 5:20 MINS 037  
Seminar 6: TH 9:30 - 10:20 MACS 129  
Seminar 7: TH 10:30 - 11:20 MACS 129

## **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)

##### 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. Written Communication
  - Present ideas in a logical order, using concrete examples including graphs and tables
  - Write using the appropriate vocabulary, presenting statistical results in (American Psychological Association) format (see Purdue Owl)

## 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)

## Lecture Content and Deadlines:

The table below lists the content of the lectures, the associated readings from the text, and graded assignments (Quiz and Research in Action due dates).

Date	Readings: Discovering the Scientist Within (Lewandowski, Ciarocco & Strohmets)	Graded Assignments Due dates are for Learning Curve (LC), Quizzes (Q), and Research in Action (RIA)
No Seminars Jan. 6, 8	Chapter 1: Psychology as a science	LC1, Q1, RIA 1 Due: Jan. 19
Seminars Begin Jan. 13, 15	Chapter 2: The research process Chapter 3: Ethics	LC2, Q2, RIA 2, LC3, Q, RIA3 Due: Jan. 19
Jan. 20, 22	Chapter 4: Research designs	LC4, Q4; RIA 4 Due: Jan 26
Jan. 27, 29	Chapter 5: Qualitative research	LC5, Q5; RIA 5 Due: Feb. 2
Feb. 3, 5	Chapter 6: Observational research Chapter 7: Correlational research	LC6, Q6, RIA 6 LC7, Q7, RIA 7 Due: Feb. 9
Feb. 10, 12	Feb. 10 Midterm Preparation No class scheduled	Feb. 12 Midterm Examination
Feb. 17 – 21	Winter Break	
Feb. 24, 26	Chapter 8: Two-group design	LC8, Q8, RIA 8 Due: Mar 1
Mar 2, 4	Chapter 9: Multigroup design	LC9, Q9, RIA 9 Due: Mar 8

Date	Readings: Discovering the Scientist Within (Lewandowski, Ciarocco & Strohmets)	Graded Assignments Due dates are for Learning Curve (LC), Quizzes (Q), and Research in Action (RIA)
Mar 9, 11	Chapter 10: Within-subjects design	LC10, Q10; RIA 10 Due: Mar 15
Mar 16, 18	Chapter 11: Factorial design	LC11, Q11, RIA 11 Due: Mar 22
Mar 23, 25	Chapter 12: Mixed design	LC12, Q12, RIA 12 Due: Mar 29
Mar 30, Apr 1	Chapter 13: Program Evaluation	LC13, Q13, RIA 13 Due: April 5

### Seminars:

The table below lists the content of the seminars and the associated assignments. *Seminar reflections are completed in-class at the end of every seminar and handed into the TA.*

Week of:	Seminar Goal <i>*changes will be posted on CourseLink</i>	Deadlines
Jan 6	<b>No Seminars</b>	
Jan 13	Research Planning - Topic & Question - Searching for and reading articles	
Jan 20	Introduction	
Jan 27	Methods	
Feb 3	Sample paper review Rubric review	
Feb 10	Academic Writing	Plan for research proposal: Due Fri. Feb. 15 <sup>th</sup> , 11:59 pm
Feb 17	No Seminars: Winter Break	
Feb 24	No Seminars	TA feedback for research plan Sunday March 1 <sup>st</sup>
March 2	Class discussion/ group work regarding TA feedback about submitted plan	
March 9	Results	

<b>Week of:</b>	<b>Seminar Goal</b> <i>*changes will be posted on Courselink</i>	<b>Deadlines</b>
March 16	Results Continued Rubric Review	
March 23	APA 6 and In-class Help Session	Research Proposal: Due Sun. Mar 29 <sup>th</sup> , 11:59 pm

**Final Exam: Wednesday April 8, 2:30 -4:30 PM**

**Course Assignments and Tests:**

**Course Outline Guidelines: Checklist**

<b>Assignment or Test</b>	<b>Due Date</b>	<b>Contribution to Final Mark (%)</b>	<b>Learning Outcomes Assessed</b>
Weekly online learning curve, quizzes, and research in action	Weekly assignments due by 11:59 pm on Sunday of the corresponding week.	LC: 10@.5 = 5% Q: 10@1 = 10% RIA:10@.5 = 5% Based on the 10 best scores	A1-3; B1-3; C1-3; D1-2
Seminar Reflections	Due in-class at the end of each seminar meeting	8% Drop lowest of 9 seminar reflections	A1-3; B1-3; C1-3; D1-2
Midterm examination	Wednesday Feb 12 (during class) Chapters 1-7	25%	A1-3; B1-2; C1-C3; D2
Plan for research proposal	Submitted on Dropbox: Friday February 15 <sup>th</sup> by 11:59 pm	7%	A1-3; B1-3; C1-2; D2
Research proposal	Submitted on Dropbox: Sunday Mar 29 <sup>th</sup> , 11:59 pm	15%	A1-3; B1-3; C1;C; D1-2
Final Exam	TBA Chapters 8 – 13	25%	A1-3; B1-3; C1-3; D1-2

**Course Resources**

**Required Text:**

Lewandowski, G. W., Ciarocco, N. J., & Strohmets, D. B. (2019). *Discovering the Scientist Within: Research Methods in Psychology. Second Edition*. Worth Publishers, New York.

## **Other Resources:**

1. CourseLink Website. Lecture slides and seminar slides will be provided on the CourseLink website. Seminar slides will be posted after the conclusion of each week.
2. Launchpad software (included with text or purchased separately) provides an e-book and the learning resources (Learning Curve, Quizzes, and Research in Action).
  - Instructions on how to access Launchpad are provided on CourseLink.

## **Course Requirements**

1. Learning Curve, Research in Action, and Weekly Quiz activities. (20%)  
You should plan to spend at least 5 hours in addition to class and seminar time doing your readings and assessments. The deadline to receive grades on the online assignments is 11:59 pm on the Sunday at the end of the assigned week.

The Learning Curve assignments **require mastery**. You will receive 0.5% for each completed activity to a maximum of 5%.

The Research in Action assignments permit multiple attempts graded by the number of attempts. You will receive up to 0.5% for each activity to a maximum of 5%.

Weekly quizzes are available beginning the Monday of each week. Your grade will be the **score on the first attempt**. The 10 best quiz scores will each count toward 1% of your final grade so that the weekly quiz assignment counts toward 10% of the final grade. Once the quiz deadline has passed, you will be able to view the items you answered incorrectly, and will be allowed to take supplementary quizzes that will not be graded.

2. Seminars (30%)

You will attend and participate in approximately 9 seminars. Seminars are essential in learning how to develop a research plan and write a 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
- Participate in self-reflection exercise about your learning in research methods
- Learn how to write an introduction, methods, and results section for a research paper

### **Seminar Reflections**

At the end of each weekly seminar, students will submit a completed seminar reflection to their course TA. These reflections will help students identify their topics of interest, explore research ideas, and clarify course concepts. Seminar reflections will be marked on the basis of completion and demonstration of exploration of course concepts (0, 1, or 2). Students will be asked to complete 9 reflections and will have the opportunity to drop their lowest grade.  
Plan for Research Proposal

Working individually students will develop a plan for their research proposal that outlines your current plan for your research proposal, including: 1) Your general topic of interest, 2) Your research question or questions, 3) The identified variables of interest, 4) Operational definitions for the identified variables of interest, 5) General description of proposed methodology, and 6) a list of five related peer reviewed journal articles. APA Referencing is not *yet* required. Maximum two pages double spaced (not including list of references).

### Research Proposal

Working individually, students will prepare a research paper which outlines the justification and methodology for a research project. While the project is not to be conducted, a results section is to be written as if the project was completed. APA guidelines for scientific writing will be followed and a detailed rubric will be provided.

### 3. Midterm (25%)

The midterm exam (Feb. 12) will comprise 50 multiple-choice questions similar to those on the weekly quizzes. The midterm will cover material from chapters 1 to 7.

### 4. Final Exam (25%)

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

## Course Policies

**Attendance:** Regular attendance at lectures is strongly recommended. Although lectures will closely follow the presentation in the textbook, many students find the material challenging. My goal is to communicate key concepts in a clear and uncomplicated fashion.

**Effective time management is critical.** To succeed in this course, it is essential that you keep up with the readings, weekly quizzes research in action activities, and seminar assignments. You should take a disciplined approach and attend lectures and seminars. You are encouraged to ask the professor and course coordinator questions when you are struggling.

### **Late or missed deadlines:**

**For the plan for research proposal,** it is at the discretion of your TA as to whether they will accept late assignments. Please do not email the course instructor. **If an extension is granted,** the assignment should be submitted to the CourseLink Dropbox, on the extended due date. After the extension period has expired, 5% of the value of the report will be deducted for each additional day of delay. After 3 calendar days, the grade received will be 0%.



**For the research proposal**, late submissions will be penalized at a rate of 5% per day and will not be accepted after 1 week past the deadline. If there is a valid reason to require an extension (see above), a penalty may be avoided. In such a case, you must email requests for consideration to the course coordinator (xxx@uoguelph.ca), and you must cc' your TA in any such email.

**For the midterm**, in the event that a student misses the midterm exam due to documented medical, psychological or compassionate reasons, then the final exam will be count toward 50% of the final grade. If a student fails to provide appropriate grounds for academic consideration, the grade on the missed midterm will be 0.

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

Undergraduate Grading Procedures

**Page Limits:**

Marks will be docked for exceeding the page limit on your research proposal and research plan. 5% deduction if longer than ½ page or more over the page limit

**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.*

**University Policies**

**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

Grounds for Academic Consideration

## **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](mailto: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 Friday April 3, 2020.

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