

INTEG 340

Research Design & Methods

Tuesdays & Thursdays in EV2-2069, 4:00 - 5:20 pm

<https://learn.uwaterloo.ca/d2l/home/479109>

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Office Hours: Tuesday and Thursday, 1 pm - 2 pm or by appointment

Course Description

This course provides an introduction to empirical research design and methods with a focus on applications in the social sciences and related fields. You will learn about core issues in research design (e.g. operationalization, sampling, ethics) that transcend specific approaches, and about a variety of techniques for collecting and analyzing quantitative and qualitative data. The course will cover both abstract and practical issues related to methodology and decision making in empirical research. By the end of the course you will be a more informed consumer and have a basic set of skills for designing and implementing your own empirical research projects. Most importantly, you will have a foundation for future learning about research design and methods.

Learning Objectives

The *Schedule* section of the syllabus identifies the core learning objectives for every scheduled topic in the course.

Deliverables

Table 1: Overview of Deliverables.

Assignment	Due Date	Points
Comprehension Quizzes (@Home)	Due at 9 pm every Mon. and Wed., Sept. 9 - Nov. 13	50
Analytic Reflection (Written)	Oct. 10	6
Analytic Reflection (Presented)	Oct. 1 and Oct. 3	4
Class Facilitation	Lead class on either Nov. 21, 26, or 28	30
Engagement / Participation	Ongoing	10

Comprehension Quizzes (@Home)

There are no exams in this course, but there are 16 short quizzes to test your comprehension of the readings and other class material, and to give you a chance to practice retrieval and strengthen learning.¹ You must complete the quizzes independently (*No collaboration of any kind!*), but you may do them on your own time, wherever you want, with or without your textbook. The quizzes will be due at 9 pm on every Monday and Wednesday, except during reading week. LEARN will not let you submit a late quiz. If you need to submit late, please email me a medical note and request that I re-open the quiz for you.

Each quiz will cover content from the readings that are scheduled for the upcoming class. They will consist exclusively of multiple choice and, in some cases, true / false questions. You should expect each quiz to have a lot of questions (*usually* between 20 and 50), but if you have done the readings carefully you should be able to complete each quiz in less than 20-30 minutes. I suggest that you: (1) do the assigned readings carefully; (2) answer as many questions as you can without consulting your book; (3) when you get to the end of the quiz, go back to your book and re-read the sections that explain content you were unsure about; (4) go back to your quiz and answer the remaining questions, and (5) Submit! Obviously it will take you longer than 20 minutes to do each quiz if you use this strategy, but the extra time you invest will pay off. This approach will help you learn better and more efficiently. You will retain more information from each chapter, which will help you avoid problems later in the term.

Why have I decided to quiz you on readings before we cover them in class? And why are there so many questions on each quiz? The main reason why I have scheduled the quizzes this way is because *it enables me to tailor our class meetings to meet your intellectual needs as they evolve throughout the semester*. Every Tuesday and Thursday morning, I will look at the results of the quiz you submitted the night before. If necessary, I will revise my notes for the class meeting to clarify things you seem to be struggling with. Similarly, the reason I have included so many questions on each quiz is because I need to know exactly what you don't understand. If I ask you a few questions about each of the key concepts from each chapter, then there end up being a lot of questions on each quiz. I think that's fair, since all the questions are multiple choice and true / false. I have enabled auto-grading for the quizzes on LEARN. That means that you will get your evaluation as soon as you finish the quiz, and

1. See Brown, Roediger, and McDaniel's (2014) *Make it Stick: The Science of Successful Learning*, Scott Young's (2019) *Ultralearning*, Weinstein, Sumeracki, and Caviglioli's (2018) *Understanding How We Learn*, and Doyle and Zakrajsek's (2013) *The New Science of Learning: How to Learn in Harmony with Your Brain*.

you will be able to see the correct answers for all questions. I set it up this way to help you learn as efficiently as possible.

Analytic Reflection (Written)

Reflection – specifically retrieving knowledge, connecting it to your experiences, and visualizing what you might do with the knowledge later – leads to stronger learning.² In the first part of this course, you will write a 500 word critical reflection on some of the key things you have learned about research design (the classes on Theory-driven Empirical Research; Paradigms, Theory, and Research; Research Ethics; Research Design and the Logic of Causation; Conceptualization, Operationalization, and Measurement; and The Logic of Sampling). You should *not* attempt to write about everything. You should identify several of the most important or useful things you have learned and focus on them. Discuss how they are relevant or connect to your experience somehow (even if just as a consumer of research), and how you might use the knowledge in the future. Finally, note that you will be presenting a preliminary version of this reflection on October 1 or 3. Your written reflection may include a reflection on the discussion from your class presentation but it does not have to.

Analytic Reflection (Presented)

Before you have to submit your analytic reflection, you will present your thoughts to the rest of the seminar on *either* October 1 or October 3. This is a chance for you to share your preliminary reflections and discuss them with me and your peers. You will have the floor for 8 minutes and 30 seconds, no more. I suggest you present your thoughts for 3-4 minutes and leave the remaining time for questions or discussions. You must present from a set of prepared notes, which must be submitted to the LEARN Dropbox no later than Monday September 30th, regardless of whether you are presenting on October 1 or 3rd.

Class Facilitation

You will collaborate in groups of 3-6 to plan and facilitate a class session on *either* (1) a method of collecting and / or analyzing qualitative data, (2) statistical thinking, or (3) mixed-methods and integrative research. I will let people sign up for the session they are most interested in learning more about, but I reserve the right to intervene or revise the groups in order to balance group size and make sure all three classes are covered. Each class should include: (1) an overview of key points, (2) time for general questions and answers, and (3) a class activities or series of small group discussion questions.

Engagement / Participation

The quality of this course – like any other – depends on you being engaged. Your participation grade will be based on (1) the quality of discussion questions you will submit for my consideration using the Survey tool on LEARN, and (2) contributions to class discussion and participation in class activities.

2. See the four books on learning science previously referenced.

You must submit a total of 5 discussion questions throughout the semester. You can choose which readings / classes you submit discussion questions for, but each of the 5 questions must be for different classes. In other words, if you submit 3 questions for a single class, it will count as 1 question, not 3. You will submit your discussion questions using the Survey tool on LEARN. There is a different survey for each class. These questions count for 1/2 of your participation grade, which means each question you submit is worth 1% of your final course grade. You will get full credit for your questions if they are clear, relevant, connected to the assigned readings, and are reasonably considered. I will not give credit for questions that are unclear, irrelevant, not connected to the readings, or which appear rushed and thoughtless. Throughout the semester, I will select questions for small group and class discussion.

The remaining 5% of your participation grade is based on your involvement in class activities. To determine this part of your participation grade, (1) I will observe your engagement in class activities throughout the semester, and (2) I will consider your own self-assessments of your participation over the course of the semester. Note that your self-assessments will *inform* my final decision about your participation grade, but will not determine the grade. I will ignore self-assessments that are implausible or extremely mismatched with my own observations. I will provide you with qualitative feedback on your participation if and when you ask for it.

If you arrive more than 10 minutes late, you will lose 50% of the credit for attending class. In other words, arriving late twice is equivalent to missing a class. There is no penalty for excused absences, which *always* require advance notice and generally require a note from a doctor.

Readings

There is one required book for this course: Earl Babbie and Lance Roberts. 2018. *Fundamentals of Social Research*. Nelson. It is available at the UW Bookstore, on reserve at Porter library, and online. Other readings will be made available on the LEARN site.

Submitting Work

I will only grade work that you submit electronically on Learn. No exceptions.

Plagiarism Detection

Text matching software will be used to screen assignments in this course. This is being done to verify that use of all materials and sources in assignments is documented. You will be given an option if they do not want to have your assignment screened by **Turnitin**. If you do not wish to submit your work to Turnitin, you can schedule a meeting with me to discuss your submissions in person.

Late Policy

I will deduct **5 points** a day for every day, or part of a day, that your work is late, including weekends. I will not make exceptions without a medical note.

Communication

The best way to communicate with me and your peers is to use our slack team. Information about the team, and how to sign up, are available on the LEARN site. You may also communicate with me over email. You should know that I respond to email (john.mclevey@uwaterloo.ca) at regularly scheduled times every day, Monday - Friday. This means that you are unlikely to get a response from me immediately, but you will get a message from me within two working days. Note: I never read or respond to work emails in the evenings or on weekends.

Feedback

I will solicit brief, informal, and confidential course evaluations throughout the semester. These will only take a few minutes of your time. The purpose is to make sure that we are moving at a comfortable pace, that you feel you understand the material, and that my teaching style is meeting your needs. I will use this ongoing feedback to make adjustments as the course progresses. Although you are not obligated to do so, please fill out the evaluations so that I can make this the best learning experience for you, and the best teaching experience for me.

On Campus Resources

Access Ability Services

The AccessAbility Office, located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the AccessAbility Office at the beginning of each academic term.

Mental Health

The University of Waterloo, the Faculty of Environment, and our Departments consider students' well-being to be extremely important. We recognize that throughout the term students may face health challenges – physical and / or emotional. Please note that help is available. Mental health is a serious issue for everyone and can affect your ability to do your best work. Counselling Services is an inclusive, non-judgmental, and confidential space for anyone to seek support. They offer confidential counselling for a variety of areas including anxiety, stress management, depression, grief, substance use, sexuality, relationship issues, and much more.

The Writing Centre

Although I will be giving you feedback on your work throughout the term, I encourage you to make appointments with people at the writing centre. Their services are available to all UW students.

University Policies

Academic Integrity

In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility.

We will all uphold academic integrity policies at University of Waterloo, which include but are not limited to promoting academic freedom and a community free from discrimination and harassment. You can educate yourself on these policies – and the disciplinary processes in place to deal with violations – on the Office of Academic Integrity website.

A student is expected to know what constitutes academic integrity, to avoid committing academic offense, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about ‘rules’ for group work / collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline. For typical penalties, check Guidelines for Assessment of Penalties.

Grievances and Appeals

A student who believes that a decision affecting some aspect of his / her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70: Student Petitions and Grievances, Section 4. When in doubt please contact your Undergraduate Advisor for details.

A decision made or penalty imposed under Policy 70 – Student Petitions and Grievances (other than a petition) or Policy 71 – (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals).

Religious Observances

Student needs to inform the instructor at the beginning of term if special accommodation needs to be made for religious observances that are not otherwise accounted for in the scheduling of classes and deliverables.

Detailed Schedule

Table 2: Overview of Scheduled Topics.

Date	Topic
Thursday, Sep. 05	Introduction + How to Succeed in this Course
Tuesday, Sep. 10	Human Inquiry and Science
Thursday, Sep. 12	Paradigms, Theory, and Research
Tuesday, Sep. 17	Research Ethics
Thursday, Sep. 19	Research Design and the Logic of Causation
Tuesday, Sep. 24	Conceptualization, Operationalization, and Measurement
Thursday, Sep. 26	The Logic of Sampling
Tuesday, Oct. 01	Analytic Reflections
Thursday, Oct. 03	Analytic Reflections
Tuesday, Oct. 08	Experiments
Thursday, Oct. 10	Survey Research
Tuesday, Oct. 15	Reading Week
Thursday, Oct. 17	Reading Week
Tuesday, Oct. 22	Non-Reactive Research
Thursday, Oct. 24	Field Research
Tuesday, Oct. 29	Qualitative Interviewing
Thursday, Oct. 31	Evaluation and Action Research
Tuesday, Nov. 05	Qualitative Data Analysis
Thursday, Nov. 07	Quantitative Data Analysis
Tuesday, Nov. 12	The Logic of Multivariate Analysis
Thursday, Nov. 14	Social Statistics
Tuesday, Nov. 19	Synthesizing Evidence with Systematic Reviews
Thursday, Nov. 21	Class Facilitated by Students (Qualitative Methods)
Tuesday, Nov. 26	Class Facilitated by Students (Statistical Thinking)
Thursday, Nov. 28	Class Facilitated by Students (Mixed Methods & Integrative Research)
Tuesday, Dec. 03	Class Debrief

Thursday, Sep. 05: Introduction + How to Succeed in this Course

This class meeting will introduce the core themes and learning objectives for the term. By the end of the class, you should (1) know what the key themes of the course are, (2) be able to clearly explain what I expect from you in the course, and (3) understand what you need to do to succeed.

Readings: This syllabus!

Tuesday, Sep. 10: Human Inquiry and Science

By the end of this class, you should be able to (1) understand how and why social scientists integrate theory and empirical research, (2) understand the importance of studying aggregates rather than solely individual cases, (3) start speaking in “variable” language, and (4) differentiate between inductive and deductive reasoning.

Readings: Babbie & Roberts (2018) Chapter “Human Inquiry and Science”

Thursday, Sep. 12: Paradigms, Theory, and Research

By the end of this class, you should be able to (1) distinguish between general *paradigms* and specific *theories* at both micro- and macro-levels, (2) understand how to derive testable hypotheses from theoretical propositions, and (3) understand how hypotheses can be tested empirically. Finally, you should be able to (4) contrast theory construction and hypothesis testing in inductive and deductive research.

Readings: Babbie & Roberts (2018) Chapter “Paradigms, Theory, and Research”

Tuesday, Sep. 17: Research Ethics

By the end of this class, you should be able to (1) explain the ethical precepts that researchers must consider before undertaking research with human participants, in particular ethical precepts about confidentiality, disclosure, potential harm, and accurate reporting of results. In addition, (2) you should have some basic familiarity with the Tri-Council’s ethical guidelines on respect for persons, concern for welfare, and justice.

Readings: Babbie & Roberts (2018) Chapter “Ethical Issues for Social Researchers”

Thursday, Sep. 19: Research Design and the Logic of Causation

By the end of this class, you should be able to (1) compare different purposes for a research project, (2) describe the three criteria for causation (non-spuriousness, temporal ordering, and correlation), (3) clearly specify the units of analysis for research, and (4) distinguish between cross-sectional and longitudinal designs.

Readings: Babbie & Roberts (2018) Chapter “Research Design and the Logic of Causation”

Tuesday, Sep. 24: Conceptualization, Operationalization, and Measurement

By the end of this class, you should be able to (1) define conceptualization, operationalization, and measurement, (2) explain *how* to conceptualize and measure variables, and (3) explain how to ensure that measures are valid.

Readings: Babbie & Roberts (2018) Chapter “Conceptualization, Operationalization, and Measurement”

Thursday, Sep. 26: The Logic of Sampling

By the end of this class, you should be able to (1) explain how samples are used to represent broader populations, (2) describe a variety of sources of potential error and bias in sampling processes, (3) explain when and why to use probability sampling vs. non-probability sampling strategies, and (4) articulate strategies for drawing samples systematically.

Readings: Babbie & Roberts (2018) Chapter “The Logic of Sampling”

Tuesday, Oct. 01: Analytic Reflections

In this seminar meeting, 1/2 the students in the class will present the key points from their analytic reflection to the rest of the class. Each presentation will be followed by questions or a short discussion. Slides are not permitted! You must present from notes, which you will submit on LEARN following your presentation.

Readings: No assigned readings!

Thursday, Oct. 03: Analytic Reflections

In this seminar meeting, 1/2 the students in the class will present the key points from their analytic reflection to the rest of the class. Each presentation will be followed by questions or a short discussion. Slides are not permitted! You must present from notes, which you will submit on LEARN following your presentation.

Readings: No assigned readings!

Tuesday, Oct. 08: Experiments

By the end of this class, you should be able to (1) explain how experimental and quasi-experimental methods are used in the social sciences, such as in studies of discrimination in hiring processes, (2) describe the power of experimental and quasi-experimental methods for understanding causal processes, and (3) describe the value of “natural” experiments in the social sciences.

Readings: Babbie & Roberts (2018) Chapter “Experiments”

Thursday, Oct. 10: Survey Research

By the end of this class, you should be able to (1) summarize the total survey error framework, and (2) distinguish between well-written and poorly-written survey questions.

Readings: Babbie & Roberts (2018) Chapter “Survey Research”

Tuesday, Oct. 15: Reading Week

Take a well-deserved break!

Readings: No assigned readings!

Thursday, Oct. 17: Reading Week

Take a well-deserved break!

Readings: No assigned readings!

Tuesday, Oct. 22: Non-Reactive Research

This class cover the basics of analyzing secondary statistics, content analysis, and comparative-historical research. There is a lot to cover, and our conversation will necessarily be a bit superficial. By the end of this class, you should be able to (1) explain the value of analyzing already-existing statistics, (2) explain how existing statistics can be used to motivate and provide context for non-quantitative research, and (3) recognize and avoid the ecological fallacy. For content analysis, you should be able to (4) describe the process of selecting content for analysis and developing a code book, (5) differentiate between manifest and latent content, and (6) discuss ways of ensuring reliability and validity in content analysis research.

Readings: Babbie & Roberts (2018) Chapter “Non-Reactive Research”

Thursday, Oct. 24: Field Research

By the end of this class, you should be able to (1) describe the advantages and disadvantages of ethnographic field methods and participatory action research, (2) demonstrate an understanding of how to address practical matters such as gaining entry to field sites, taking field notes, producing codes, evaluating the reliability and validity of ethnographic observation, and finally, (3) explain what is involved in conducting field research *ethically*. In class, we will pick collaborators and chapters for the “class facilitation” deliverable, due on March 22 and 27.

Readings: Babbie & Roberts (2018) Chapter “Field Research”

Tuesday, Oct. 29: Qualitative Interviewing

By the end of this class, you should be able to (1) explain how social scientists use qualitative interviews to produce qualitative data, including how they develop rapport with participants, (2) describe the typical structure and development of an interview-based research project, (3) explain the logic of “sequential” interviews, and (4) compare the strengths and limitations of focus groups over one-on-one interviews.

Readings: Babbie & Roberts (2018) Chapter “Qualitative Interviewing”

Thursday, Oct. 31: Evaluation and Action Research

By the end of this class, you should be able to (1) explain how social science methods can be used to evaluate the effectiveness of social programs, policies, or other interventions, (2) describe unique challenges of evaluation research (e.g. ethical and political barriers), and (3) compare qualitative and comparative approaches to evaluation research. Finally, (4) you will be able to differentiate between evaluation research and action research.

Readings: Babbie & Roberts (2018) Chapter “Evaluation Research”

Tuesday, Nov. 05: Qualitative Data Analysis

By the end of this class, you should be able to (1) characterize different approaches to qualitative data analysis, (2) describe the iterative (and generally inductive) nature of qualitative data analysis, (3) correctly define and describe the grounded theory approach to qualitative data analysis.

Readings: Babbie & Roberts (2018) Chapter “Qualitative Data Analysis”

Thursday, Nov. 07: Quantitative Data Analysis

By the end of this class, you should be able to (1) define key concepts in basic quantitative data analysis (including concepts related to frequency distributions, central tendency and dispersion), (2) differentiate between types of quantitative variables, and (3) construct simple bivariate tables.

Readings: Babbie & Roberts (2018) Chapter “Quantitative Data Analysis”

Tuesday, Nov. 12: The Logic of Multivariate Analysis

By the end of this class, you should be able to (1) describe the basic logic of multivariate analysis, including explaining what it means to “control” for a variable when analyzing the relationship between two other variables, (2) define and describe the elaboration model, and (3) differentiate between replication, explanation, interpretation, and specification.

Readings: Babbie & Roberts (2018) Chapter “The Logic of Multivariate Analysis”

Thursday, Nov. 14: Social Statistics

By the end of this class, you should be able to (1) understand and describe the difference between descriptive statistics and inferential statistics, (2) read and interpret a correlation matrix, (3) understand the logic of regression analysis, (4) understand the meaning of statistical significance as it relates to the likelihood that an observed relationship is due to sampling error, and (5) evaluate whether an association shown in a cross-tabulation is statistically significant using the Chi-square statistic.

Readings: Babbie & Roberts (2018) Chapter “Social Statistics”

Tuesday, Nov. 19: Synthesizing Evidence with Systematic Reviews

This class will introduce and motivate evidence synthesis broadly and systematic reviews more specifically. The materials for this class were developed collaboratively with KI graduate Hannah James.

Readings: White & Waddington (2012) “Why do we care about evidence synthesis? An introduction to the special issue on systematic reviews” and pages 1-16 of Gough, Oliver, & Thomas’ (2012) *Introducing Systematic Reviews* (Available on LEARN).

Thursday, Nov. 21: Class Facilitated by Students (Qualitative Methods)

Class today will be facilitated by a student group. The group will have selected a topic related to **qualitative data collection and / or analysis** to dive into more deeply. The class will be based on readings from a pre-approved list and will be made available to students on the LEARN site.

Readings: The reading will be selected from Kristin Luker’s (2008) *Salsa Dancing into the Social Sciences*. The student group will select the chapter and I will make it available on LEARN.

Tuesday, Nov. 26: Class Facilitated by Students (Statistical Thinking)

Class today will be facilitated by a student group. The group will have selected a topic related to **statistical thinking and quantitative data collection and / or analysis** to dive into more deeply. The class will be based on readings from a pre-approved list and will be made available to students on the LEARN site.

Readings: The reading will be selected from David J. Hand's (2008) *Statistics: A Very Short Introduction*. The student group will select the chapter and I will make it available on LEARN.

Thursday, Nov. 28: Class Facilitated by Students (Mixed Methods & Integrative Research)

Class today will be facilitated by a student group. The topic will be a deeper dive into mixed methods and integrative research.

Readings: Mario Small. 2011. "How to conduct a mixed methods study: Recent trends in a rapidly growing literature." *Annual Review of Sociology*. 37:57-86.

Tuesday, Dec. 03: Class Debrief

We will debrief the class and discuss ways of improving it for future cohorts.

Readings: No assigned readings!
