

RES 502 (3.0 credits)

Interdisciplinary Case Analysis and Research Design (Master's level)

Sept – Dec 2023 (2023W Term 1)

Thursday 9am-12pm, AERL room 419 (the Fishbowl)

Instructor

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Office hours: by appointment to meet in person or online.

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1. Course Overview

This course explores how to design effective, interdisciplinary research for addressing a broad range of problems in the area of environment and sustainability. Case studies are used to develop understanding and insight into research design fundamentals, including developing researchable topics, reviewing relevant literature, and identifying suitable research methods for evidence collection and analysis. Cases are selected to encompass a broad range of research methods (qualitative, quantitative, and mixed), and to demonstrate their strengths and limitations. Students will gain experience in developing and communicating research designs through written proposals and oral presentations. This course is designed for RES master's students.

1.1 Course Objectives

The goals of this course are to help students gain:

- literacy in research methods;
- familiarity with effective research design; and
- experience in developing a defensible research proposal.

While both qualitative and quantitative methods will be discussed, as well as mixed methods, the emphasis will remain on methodological literacy and research design. The course thus serves to complement, rather than substitute for, in-depth courses on research methods.

1.2 Learning Outcomes

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

- Identify different types of research methods and describe their strengths and limitations;
- Explain, using illustrative cases, why different methods might be appropriate and effective in different research contexts;
- Describe the major components of research proposals, especially as relevant for a master's thesis;
- Critique a research proposal using common evaluation criteria;
- Demonstrate familiarity with effective research design by developing and defending a research proposal.

1.3 Course Structure

Weekly topics are outlined in Table 1. The first unit of the course focuses on acquiring literacy in research methods and familiarity with effective research design. Research methods and design will be introduced through a series of case studies that illustrate how different approaches can be utilized to investigate interdisciplinary problems related to the environment and sustainability.

The second unit of the course focuses on developing skills to prepare a defensible proposal for the student's own thesis research. Students will iteratively develop and share their drafts, receive peer and instructor feedback, and in turn provide comments on their classmates' work.

Table 1. Weekly Topics

Unit	Week	Date	Topic
I. Research design	1	07-Sep	Introduction
	2	14-Sep	Research questions
	3	21-Sep	From literature review to revised questions
	4	28-Sep	Methods and cases (I)
	5	05-Oct	Methods and cases (II)
	6	12-Oct	No class – UBC will use Oct 12 as a “deemed” Monday
II. Research proposal	7	19-Oct	Research design and research proposals
	8	26-Oct	Master’s theses; Initial research question
	9	02-Nov	Literature review and conceptual framework
	10	09-Nov	Individual meetings
	11	16-Nov	Data and methods
	12	23-Nov	Peer review of draft presentations
	13	30-Nov	Peer feedback on presentations
	14	07-Dec	Q&A on presentations
		12-Dec	Final assignment due

1.4 Class Format

This is a seminar course that meets once a week. While it is scheduled for a 3-hour block, we will use the time flexibly. The course is designed with class activities to meet course learning objectives while encouraging interaction and minimizing screen strain. On a weekly basis, the course will typically follow a regular schedule of activities, as outlined in Tables 2 and 3 for the two units of the course, respectively. You will generally be asked to post on the discussion board prior to class.

Table 2. Weekly Class Structure for Unit I

Day/time	Duration (appx)	Activity	Notes
Thurs. 9:30am- 12:00pm	50 min.	Overview for week; Small group discussion ; Report back	Full class Breakout groups and discussion board; Full class
	10 min.	<i>Break</i>	
	50 min.	Instructions for exercise; In-class exercise ; Report back	Full class Varies ⁽¹⁾ Full class
	10 min.	<i>Break</i>	
	30 min.	Lecture (incl. instructions for homework)	Full class
	On own time	60 min. ⁽²⁾ 30 min. ⁽²⁾ 60 min. ⁽²⁾	Readings; Weekly homework ⁽³⁾ Assignment #1 ⁽⁴⁾

Notes: (1) Format and platform will vary by week and will be announced in class
 (2) Estimate; actual time may vary, depending on weekly topic and each student’s level of preparedness
 (3) Asynchronous activity in lieu of in-class time
 (4) I suggest that students do some work each week on the assignment

Table 3. Weekly Class Structure for Unit II

Day/time	Approx. duration	Activity	Notes
Thurs. 9:30am- 12:00pm	50 min.	Overview for week; Small group workshop	Full class Breakout groups
	10 min.	<i>Break</i>	
	40 min.	Small group workshop (cont'd); Report back	Breakout groups Full class
	10 min.	<i>Break</i>	
	40 min.	In-class exercise ; Report back	Varies ⁽¹⁾ ; Full class
On own time	30 min. ⁽²⁾	Weekly homework	Varies ⁽¹⁾
	2 hr. ⁽²⁾	Assignment #2	–

Notes: (1) Format and platform will vary by week and will be announced in class

(2) Estimate; actual time may vary, depending on weekly topic and each student's level of preparedness

Please note that instead of meeting for 3 hours at a time, class will generally meet for 2.5 hours (starting at 9:30am rather than 9:00am) with 0.5 hours of asynchronous activity noted in the schedule as weekly homework.

2. Course Materials

2.1 Technology Requirements

We will be using UBC's Canvas platform to share course materials (e.g., lecture slides, readings) and for submitting assignments and discussion posts. During group discussions, students will be asked to summarize their conclusions on the Canvas discussion board. Primarily the course will be in person.

2.2 Readings

There is no textbook for this course. Readings will be available electronically through the UBC Canvas system. Readings (Table 4) will generally consist of academic journal articles and book chapters. These will be supplemented by examples and resources presented in class.

Table 4. Readings

Week	Full Citation
2	<p>Öberg, G. 2011. "Marking Your Playground," ch.7 in <i>Interdisciplinary Environmental Studies: A Primer</i>. Chichester, UK: Wiley-Blackwell.</p> <p>du Toit, J. 2014. "Research Design," ch.2.2 in E.A. Silva, P. Healey, and N. Harris, eds. <i>The Routledge Handbook of Planning Research Methods</i>. Florence, US: Routledge.</p>
3	<p>Farthing, S. 2016. "A Justification for Your Research Question," ch.4 in <i>Research Design in Urban Planning: A Student's Guide</i>. London: Sage Publications Ltd.</p>
4	<p>Silliman, B.R., J. van de Koppel, M.W. McCoy, J. Diller, G.N. Kasozi, K. Earl, P.N. Adams, and A.R. Zimmerman. 2012. "Degradation and Resilience in Louisiana Salt Marshes after the BP-Deepwater Horizon Oil Spill," <i>Proc. National Academy of Sciences</i> 109(28): 11234–11239.</p> <p>Arora, M.P. and S. Lodhia. 2017. "The BP Gulf of Mexico Oil Spill: Exploring the Link Between Social and Environmental Disclosures and Reputation Risk Management," <i>Journal of Cleaner Production</i> 140: 1287-1297.</p> <p>Ritchie, L.A., D.A. Gill, and M.A. Long. 2018. "Mitigating Litigating: An Examination of Psychosocial Impacts of Compensation Processes Associated with the 2010 BP Deepwater Horizon Oil Spill," <i>Risk Analysis</i> 38(8): 1656-1671.</p> <p>Mayer, B., K. Running, and K. Bergstrand. 2015. "Compensation and Community Corrosion: Perceived Inequalities, Social Comparisons, and Competition Following the Deepwater Horizon Oil Spill," <i>Sociological Forum</i> 30(2). DOI: 10.1111/socf.12167</p>
5	<p>Mekonnen, M.M. and A.Y. Hoekstra. 2012. "A Global Assessment of the Water Footprint of Farm Animal Products," <i>Ecosystems</i> 15: 401-415.</p> <p>Fielding, K.S., A. Spinks, S. Russell, R. McCrear, R. Stewart, and J. Gardner. 2013. "An Experimental Test of Voluntary Strategies to Promote Urban Water Demand Management," <i>Journal of Environmental Management</i> 114: 343-351.</p> <p>Harris-Lovett, S.R., C. Binz, D.L. Sedlak, M. Kiparsky, and B. Truffer. 2015. "Beyond User Acceptance: A Legitimacy Framework for Potable Water Reuse in California," <i>Environmental Science & Technology</i> 49: 7552-7561.</p> <p>Walker, D., N. Forsythe, G. Parkin, and J. Gowing. 2016. "Filling the Observational Void: Scientific Value and Quantitative Validation of Hydrometeorological Data from a Community-Based Monitoring Programme," <i>J. Hydrology</i> 538: 713-725.</p>

3. Course Requirements and Grading

3.1 Course Requirements

Course requirements (Table 5) are designed to support the course learning outcomes. Generally speaking, students will gain or increase their familiarity with different research methods and research design principles in the first part of the course. They will develop skills and experience with developing, defending, and critiquing research proposals in the second part. There will be two major assignments (described in Assignments, below) corresponding to these two units. Weekly homework, together with in-class discussion, exercises, and feedback, is designed to help students develop their thinking on these assignments iteratively and progressively.

Table 5. Composition of Final Grade

% of grade	Course element	Due date
30%	Assignment #1 – Research design guide	Tues Oct. 17, 2023
30%	Assignment #2 – Research proposal	Tues Dec. 12, 2023
20%	Class preparation (homework)	Throughout term
20%	Class participation	Throughout term

3.2 Assignments

Learning objectives of the two major assignments are noted in Table 6. Assignment #1 will take the form of a guidelines document in which students will articulate, organize, summarize, synthesize, and reflect upon what they have learned about effective research design. The intent is to develop a document that they can refer to while developing their own research proposal and throughout the process of conducting the actual research. In Assignment #2, students will work on a proposal for their own master's thesis.

Table 6. Assignments

No.	Topic	Learning objective
1	Research design guide	Synthesize and reflect on learning about effective research design.
2	Research proposal	Gain experience developing a research proposal. Produce a proposal suitable for a master's thesis.

3.3 Homework

Weekly homework will also be assigned. Homework is listed in the Course Outline below and will be explained more fully in class. Students are expected to complete all homework as part of class preparation and may be asked to share their homework during class.

In the first unit of the course, homework will typically involve preparing notes for class discussion or exercises. In the second unit, it will typically entail drafting sections of the research proposal or providing written peer feedback on classmates' work.

3.4 Participation

Class participation is essential to learning in this course. Students are expected to attend all classes, to come prepared, and to participate actively. Peerfeedback is an important component of this course, and students are expected to critique their classmates'work in a thoughtful, constructive, and professional manner.

3.5 Grading

Assignments #1 and #2 will be graded on the following criteria, as applicable:

- Appropriate application of course concepts;
- Identification and use of relevant sources;
- Originality;
- Clarity and completeness of documentation;
- Clarity and logic of explanation, reasoning and argument; and
- Professional writing/presentation.

Table 7 summarizes the general grading scheme that will be used for all elements of the course: the two assignments, the homework and participation components, and consequently, the final grade. Grades in the A– to A+ range indicate normal, satisfactory achievement.

Table 7. Grading Scheme

Numerical grade	Letter grade	Description	Explanation
95~100	A+	Outstanding	Extraordinary performance. Extremely professional, thorough, original, and insightful.
90~94	A+	Excellent	Consistently high-quality work. Substantially exceeds expectations. Performance better than that of most peers.
85~89	A	Very good	Fully meets and occasionally exceeds expectations. Work conducted on time, competently, and professionally.
80~84	A–	Good	Generally meets expectations.
76~79	B+	Fair	Some deficiencies
72~75	B		
68~71	B–		
64~67	C+	Serious deficiencies	Serious or frequent deficiencies in work
60~63	C	Marginally pass	
0~59	F	Fail	Fail

4. Course Policies

4.1 Late Policy

Points will be taken off for late assignments (Table 8). Students with extenuating circumstances should notify the instructor as soon as possible.

Table 8. Penalty for Late Assignments

Days past due	Points deducted (/100)
1-7 days	10 points/day
>7 days	assignment will not be graded

4.2 Academic Integrity

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply if the matter is referred to the President's Advisory Committee on Student Discipline. Careful records are kept in order to monitor and prevent recurrences. A more detailed description of academic integrity, including the University's policies and procedures, may be found in the [Academic Calendar](#).

5. Detailed Course Outline

Format key:	ALL = all-class session	LEC = lecture
	GRP = in small groups	HW = homework for next week
	EXER = in-class exercise	OH = office hours

Unit I. Research Design

Week 1. Introduction

Date	Format	Topic / task
Sep 7	ALL	Overview of week; Introductions
	GRP	Interdisciplinary research
	LEC	Syllabus; Assignment #1 (research design guide) distributed
	HW	Readings [1, 2] and notes for discussion Select a paper; be prepared to discuss its research question

Readings: [1] Öberg (2011), ch. 1 “Introduction” and ch.7 “Marking your playground”
 [2] du Toit (2014), ch.2.2 “Research design”

Week 2. Research questions

Date	Format	Topic / task
Sep 14	ALL	Overview of week
	GRP	Discuss readings [1, 2] and research questions from selected paper; What makes a good research question?
	EXER	Types of research questions
	LEC	Research questions
	HW	Reading [3] and notes for discussion For selected paper, be prepared to discuss its literature review, findings, and contributions

Readings: [3] Farthing (2016), ch.4 “A justification for your research question”

Week 3. From literature review to revised questions

Date	Format	Topic / task
Sep 21	ALL	Overview of week
	GRP	Discuss reading [3] and findings of selected paper; Research contributions
	EXER	Literature review evaluation
	LEC	Reading and writing literature reviews; gaps and contributions
	HW	Readings [4~7] and notes for discussion

Readings: [4] Silliman et al. (2012) “Degradation and resilience in Louisiana salt marshes...”
 [5] Arora and Lodhia (2017) “...environmental disclosures and reputation risk management”
 [6] Ritchie et al. (2018) “Psychosocial impacts...”
 [7] Mayer et al. (2015) “Compensation and community corrosion...”

Week 4. Methods and cases (I) – oil spill impacts

<i>Date (d/m)</i>	<i>Format</i>	<i>Topic / task</i>
Sep 28	ALL	Overview of week
	GRP	Discuss readings [4~7]
	EXER	Conceptual frameworks
	LEC	Research methods and design
	HW	Readings [8~11] and notes for discussion

Readings: [8] Mekonnen and Hoekstra (2012) “A global assessment of the water footprint of farm animal products”
[9] Fielding et al. (2013) “An experimental test of ...urban water demand management”
[10] Harris-Lovett et al. (2015) “...A legitimacy framework for potable water reuse in California”
[11] Walker et al. (2016) “...Hydrometeorological data from a community-based monitoring programme”

Week 5. Methods and cases (II) – water scarcity

<i>Date</i>	<i>Format</i>	<i>Topic / task</i>
Oct 5	ALL	Overview of week
	GRP	Discuss readings [8~11]
	EXER	Mixed methods
	LEC	Research methods and design (cont'd)
	HW	Assignment #1

Week 6. No class – UBC declares Thursday Oct 12 to be an academic Monday

<https://ubctoday.ubc.ca/news/may-05-2023/change-academic-scheduling-october>

Unit II. Research Proposals

Week 7. Research design and research proposals

<i>Date</i>	<i>Format</i>	<i>Topic / task</i>
Tu Oct 17	A#1	Assignment #1 Due
Oct 19	ALL	Overview of week; Assignment #2 (research proposal) distributed
	EXER	Reverse proposal
	LEC	Qualitative research design ⁽¹⁾ (guest lecture: Leila Harris)
	HW	Initial research question for master’s thesis

⁽¹⁾ *Readings:* Tremblay and Harris (2018)

Week 8. Master’s theses; Initial research question

<i>Date</i>	<i>Format</i>	<i>Topic / task</i>
Oct 26	LEC	Overview of week; Research proposal examples; Thesis examples
	GRP	Initial research questions
	EXER	Scoping a master’s thesis
	HW	Key concepts and conceptual framework for own master’s thesis

Week 9. Literature review and conceptual framework

<i>Date</i>	<i>Format</i>	<i>Topic / task</i>
Nov 2	ALL	Overview of week
	GRP	Operationalizing a conceptual framework
	EXER	Scoping own master's thesis
	HW	Prepare material for individual meeting

Week 10. Individual meetings

<i>Date</i>	<i>Format</i>	<i>Topic / task</i>
Nov 9	OH	No class – individual meetings with instructor, to be scheduled during week
	HW	Draft material on data and methods

Week 11. Data and methods

<i>Date</i>	<i>Format</i>	<i>Topic / task</i>
Nov 16	ALL	Overview of week
	GRP	Peer review of data and methods
	EXER	Proposal review criteria
	HW	Draft presentation for Assignment #2

Week 12. Peer review of draft presentations

<i>Date</i>	<i>Format</i>	<i>Topic / task</i>
Nov 23	ALL	Overview of week
	GRP	Draft presentations and feedback
	EXER	Communication check
	HW	Recorded presentations for Assignment #2

Week 13. Proposal presentations

<i>Date</i>	<i>Format</i>	<i>Topic / task</i>
Tu Nov 28	A#2	Recorded presentations due
Nov 30	OH	No class – use time for HW Instructor available for individual meetings during week
	HW	View classmates' A#2 presentation recordings (all) Prepare questions/comments/critique for classmates (selected)

Week 14. Proposal presentations (cont'd)

<i>Date</i>	<i>Format</i>	<i>Topic / task</i>
Dec 7	ALL	Q&A on presentations Course wrap-up
Tu Dec 12	A#2	Written submission Due