updated: 8 September 2014

Geography 460 – Research in Sustainability [3credits]
Course outline - Fall 2014

Classroom: Burnside Hall, room 308
Class time: Wednesday, 2:25p – 5:25p
Office location: Burnside Hall, room 432
Office hours: T 2p–4p; W 10a–12p; or as available
please schedule an appointment

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"Research is formalized curiosity. It is poking and prying with a purpose."
- Zora Neale Hurston, Dust Tracks on a Road

Summary
Most agree that "sustainable development" is a desirable goal for society. However, consensus does not extend to recommendations for *how* to achieve this. Which actions are sustainable, which ones are not? What recommendations will put society on a more sustainable path? Which recommendations can we trust, which ones are based on weak or unfounded assumptions? Do we know enough to make an informed policy recommendation? Finding answers to these questions requires research and investigation into the complex interactions between nature and society, and understanding the methods that underlie this research requires a hands-on approach to the process.

In this course students develop independent research projects on topics related to sustainability. This will include: defining and honing a research question, understanding the current state of knowledge, developing testable hypotheses or theories, selecting methods with which to assess hypotheses, analyzing available data, and communicating findings. Good research often tells a compelling story. This includes selecting important and timely research topics, applying rigorous methods to the research question, and also clearly and convincingly communicating one's findings.

Theme
This year's research projects will be organized around the theme of "agrarian Montreal". This could include a variety of topics such as an analysis of food availability by neighborhood, the use of agricultural products within a Montreal industry (bagels, beer?), the changing nature of agrarian identity, agricultural inputs (water, fertilizer, pesticides), etc. However, deviations from this theme based on personal interest or past experience are welcome.

Learning objectives
1. Experience the research process. The primary goal of the class is to "get your hands dirty" – to experience how research is done. Students will participate in the research process from start to finish.

2. Understand the research process. Students will be better able to assess, utilize or critique others' research or research-based policy recommendations.

Course structure
Broadly, the structure of the course will follow the steps common to most research processes[1]:

	Stage	Guiding questions
1.	Choose a (broad) topic	What are you passionate about? What interests you? What do you think are the most pressing issues in sustainability today?
2.	Background information	Learn about the topic & understand local context
3.	Define a research question	What question(s) do we need to answer to develop more sustainably (related to the topic)?
4.	Collect data (& then revisit research question)	Create or look for data, case studies, or available information
5.	Analysis and synthesis of the data (& then revisit research question)	Can the data I have and say something meaningful? What method should I use?
6.	Interpretation of the results (& then revisit research question)	How do the results inform my research question?
7.	Dissemination of findings	How do I communicate what I've learned to maximize impact and influence?

These steps give the appearance that research is logical and sequential. In reality, research is iterative and circuitous. There are many stops, starts and backtracking. Expect some frustration – it is an important part of the research process! It is crucial that we clearly distinguish what our research is able to say or not say, and often it takes iteration to align the question(s) we can answer with the data that are available.

The class is largely unstructured and designed to with the first objective in mind: to "get your hands dirty." We will work individually at first to develop interesting questions, then quickly organize into teams to do the work to answer some of those questions. Each team will summarize their research in a final presentation and either a final project report of publication quality or a research poster suitable for presentation at an international research conference. Each team should aim to submit their final output to one of McGill's undergraduate research journals (some past submissions include Field Notes, the McGill Science Undergraduate Research Journal, Branches and The Prognosis) or present a poster at one of McGill's research conferences (e.g., the McGill Sustainability Symposium, Arts Undergraduate Research Event). Ideally each team will do both, although it is not required.

Course components
Short talks. Some topics deserve some introduction or background, which I will present in "short talks" of 15-20 min when necessary throughout the semester. Some examples of short-talk topics include:

- What is research, what is the research process?
- Research design
- Research proposals and storytelling
- Communicating sustainability, maximizing impact & influence of your work

Team & Prof meetings (schedule an appointment: http://brianerobinson.youcanbook.me). Over approximately 1-hour teams have the opportunity to discuss where they are in the research process. These are intended to be intensive discussions about the team's progress, so come prepared to discuss roadblocks, explore paths forward, exciting ideas, etc.

[1] see the schedule below for week-by-week details.

Detailed Schedule

Wk	*Date*	*Description*
1	Sept 3	Introduction & schedule • *Short talk*: What is research, the research process. • Introduce the theme. Sample topics/ideas. • 3:30 – 5:30 Library Session with Julie Jones. **Assignment 1: 3 ideas (due Sept 9, 5p)**
2	Sept 10	Honing ideas • Idea review and team development. • *Short talk*: Research proposals and storytelling. • Review proposal guidelines. **Assignment 2: Team idea exploration (due Sept 16, 5p)**
3	Sept 17	Team & prof meetings: potential research questions. **Assignment 3: Proposal outline/draft (due Sept 23, 5p)**
4	Sept 24	Research design • *Short talk:* Research design. • Team & prof meetings: Proposal development (as needed). **Proposal due Monday Sept 29.**
5	Oct 1	Proposal presentations • Teams peer-grade other teams. **Assignment 4: Peer-review of proposals due Oct 6.**
6	Oct 8	Proposal revisions • Iterate on the question and methods. Incorporate peer and instructor feedback. • Mid semester feedback. **Revised proposals due Oct 13 (optional).**
7	Oct 15	Team & prof meetings: Research
8	Oct 22	Team & prof meetings: Research
9	Oct 29	*Short talk*: Communicating sustainability, maximizing impact Team & prof meetings: Research
10	Nov 5	Team & prof meetings: Research
11	Nov 12	Team & prof meetings: Research
12	Nov 19	Draft presentation: practice presentation to class **Draft of research report due.**
13	Nov 26	Panel presentation to review committee.
	Nov 26 - Dec 1	Team & prof meetings: revise & finish the final report.
Final	Dec 4	**Final report & Individual assessment due.** (Late penalties will be assessed after 5p Dec 12)

Assessments and grading

Item	***Description***	***Weight***	***Due***
Assignment 1	Three ideas	**20 %**	**Sept 9**
Assignment 2	Team idea exploration		**Sept 16**
Assignment 3	Proposal outline/draft		**Sept 23**
Assignment 4	Peer review of proposal		**Oct 6**
Proposal	Teams write a proposal for their research project loosely modeled after solicitations from Canada's Natural Science and Engineering Research Council (NSERC) and the Social Science and Humanities Research Council (SSHRC).	**15%** (opt revision: gain up to ½ points back)	**Oct 1** (Oct 13)
Proposal presentation	Teams present their proposal to the class.	**10%**	**Oct 7**
Final panel presentation	Teams present the findings of their research to a small committee of graduate students and/or professors. Panelists evaluate groups' preparedness, methodology, presentation of results, and interest of findings.	**25%**	**Nov 26**
Final report or poster	Final reports should be modeled after a journal article. You may find it helpful to browse some of the following academic journals to gauge expectations for length, content and format: Ecology & Society, Global Environmental Change, Society and Natural Resources, World Development. Final posters will be of suitable quality for presentation at an international conference.	**20%**	**Dec 4** (late penalties accrue after 5p Dec 12)
Peer assessment	Peer-judged allocation of effort and contribution. Teams should discuss expectations early. [i.e., Is it ok to miss team meetings? How many? How will task be divided? etc…] Keep communication open. If you feel like you're not pulling your weight, ask your team what you can do to contribute.	**5%**	
Self assessment	A final individual assignment in which each student reflects on the process of "doing research". Students reflect on surprises, misconceptions about research, how/whether the question changed throughout the semester, etc.	**5%**	
Instructor assessment	Instructor's assessment of your involvement & engagement in the research and team process. This includes attendance, constructive participation in the classroom, and engagement in team & prof meetings.	**5%**	

For information on university and department policies for student assessment, please go to *http://www.mcgill.ca/geography/studentassessment*

Language of Assignments

In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded. (approved by McGill Senate on 21 January 2009 - see also the section in this document on Assignments and evaluation.)
Conformément à la Charte des droits de l'étudiant de l'Université McGill, chaque étudiant a le droit de soumettre en français ou en anglais tout travail écrit devant être noté (sauf dans le cas des cours dont l'un des objets est la maîtrise d'une langue).

Suggested reading

Given the hands-on nature of this class, there is no required textbook. But here are some suggested readings that review the research process from a perspective that tries to integrate qualitative and quantitative perspectives:

Bradley HE and Collier D. 2004. Rethinking Social Inquiry: Diverse tools, Shared Standards. (Lanham, MD: Roman and Littlefield).
Goertz G and Mahoney J. 2012. A Tale of Two Cultures: Qualitative and Quantitative Research in the Social Sciences. (Princeton, NJ: Princeton University Press).
Luker K. 2008. Salsa Dancing into the Social Sciences. (Cambridge, MA: Harvard University

Press).
Ragin C. 1989. The Comparative Method: Moving Beyond Qualitative and Quantitative Strategies. (Berkeley, CA: University of California Press).

Course prerequisites
Students entering the course should have sufficient background to understand multiple perspectives on sustainability – we will not explore or try to define sustainability, per se. Further, students should come with some analytic skills they are comfortable putting to use towards a particular research question.

Academic integrity
McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see www.mcgill.ca/students/srr/honest/ for more information).

L'université McGill attache une haute importance à l'honnêteté académique. Il incombe par conséquent à tous les étudiants de comprendre ce que l'on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Code de conduite de l'étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter le site www.mcgill.ca/students/srr/honest/).
(approved by Senate on 29 January 2003)

To help ensure students follow proper citation and attribution practices, I reserve the right to use text-matching software to flag potential problems. If you have questions about how to properly reference work, please see me in office hours.

Late work
In this course, late assignments will be difficult to manage as they will disrupt the schedule and workflow of the whole semester, and is therefore strongly discouraged. Work that is 5 min – 1 day late will result in a 10% reduction in the otherwise earned grade on that assignment. Work from 1 day – 1 week late will result in a 30% reduction in the otherwise earned grade. Work more than one week late will not be accepted. Please see me for special circumstances.

Course modifications
Given the nature of this course we, as a class, may feel we need to alter aspects of the course outline as given above. We will revisit the expectations of the class as we go along and may find it agreeable to speed up or slow down portions of the process. Any alterations to the course will be an open and transparent discussion among the class. Further, in the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.
If you have thoughts or concerns about our trajectory during the semester, please let me know.