Research Skills and Critical Thinking **EVDS 683.40 (3-0) and 683.41 (3-0)**
Fall 2013

PF 2140 Wednesdays & Fridays 9:30 - 12:20

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Introduction
Design research is directed at the design or construction of products or processes that satisfy previously determined demands (Kuipers et al. 1992, p.38). Dorst (2008) admonished that focusing mainly on professional practice of design causes "a large gap in the logical progression from observation to description, to explanation and then to prescription" (methods and tools that support the practitioner). He argued that we should enrich design research by focusing on deep and systematic understanding of the 'design object' [content of a problem], the design context and the designer. In its simplest explanation, environmental design research involves understanding, informing and creating products or processes (designs) that contribute to achieving desired outcomes for the world we live in. This course focuses on the nature of inquiry of environmental design research, framing environmental design research problems, and skills for writing research proposals.

Objectives
The purpose of the course is to teach students about developing environmental design research proposals that exhibit thoughtful, thorough, theoretical and practical understanding of the background, purposes and processes employed in scholarly research and reporting in the Faculty of Environmental Design. Course objectives are:

- Introduce writing an academic proposal and its components, with a focus on being able to produce a conceptual framework (a model of the system under investigation), rationale, research purpose and objectives, and an overview of appropriate methods.
- Relate personal background, education, skill sets and interests to your research focus.
- Make progress towards developing an in depth understanding of a research subject.
- Improve skills for accessing and using literature and precedents as a basis for research.
- Learn how to critically review literature and precedents for framing a research problem.
- Learn how to create a conceptual framework for a research project.
- Develop an understanding of interdisciplinarity and multiple ways of knowing.
- Learn how to think critically as a researcher by testing assumptions and ideas.
- Understand the iterative nature of environmental design research, including the evolution of research questions or objectives, and allowing ideas to mature through debate and inquiry.

Teaching Approach

Lectures, group exercises, tutorials, discussion and feedback on assignments are employed in experience-based, inquiry-focused explorations for intervention-oriented environmental design research. Emphasis is placed on collegial exchanges among class participants including students, instructors, advisors, and mentors. Through a series of individual and group exercises and assignments students will build a foundation for research, develop a conceptual framework (the system of concepts, assumptions, expectations, beliefs, and theories that supports and informs a research project), and write and present an academic proposal on a research topic of their choice.

Content: Topic Areas & Detailed Class Schedule

Date	Topic and activities
September	
11	Lecture: Course introduction and introduction to environmental design research. Exercise: form thematic groups; address question - Why does environmental design research matter? Oral report by groups at end of class.
13	Lecture: Where good ideas come from. Group exercise: Intersections between diverse knowledge and research interests. Oral group report.
18	Lecture: Relationships between background, research interests and literature. Group exercise: What are you bringing to your thesis research; how is it relevant; how does it influence the way you think? Oral group report.
20	Lecture: Critical thinking lecture (Tom Harper). Group exercise: Critical evaluation of a metropolitan plan for flood hazard mitigation. Oral report. ***September 23: Assignment #1 due: Written Brief on Research Interests and Background***
25	Lecture: Using the literature and information management - sources, search engines, peer-reviewed vs. gray literature and web information, information management. Group exercise: Annotated bibliography on a negotiated topic. Oral report.
27	Tutorial at U of C Library - library resources and literature search relevant to EVDS fields of study (to be confirmed)
October	
2	Lecture: How to find a research topic, frame a research problem, and develop it into a research proposal. Group exercise: Describe a research problem on a topic of interest to the group and suggest gaps in knowledge or practice (research opportunities).Oral report.
4	Lecture: Theoretical foundations and conceptual frameworks (system of concepts, assumptions, expectations, beliefs, and theories that supports and informs a research project). Group exercise: develop a conceptual model (diagram) of a research problem and report key concepts. Oral report and diagram. ***October 7 Assignment # 2 due - written report - literature and information sources for a research topic***

9	Individual work and tutorials with instructors (conceptual frameworks).
11	Lecture: Research purpose and objectives. Group exercise: Based on the conceptual model developed previously (or a refined or new one of the group's choice) develop a research purpose statement and objectives. Oral report.
15 to 18	***No classes - Block Week*** ***October 21 Assignment # 3 due: Written literature review and annotated bibliography***
23	Lecture: Research methods - qualitative, quantitative and mixed methods frequently used in environmental design research. Group exercise: review methods used by two previous authors to address research objectives of common interest to the group. Oral report.
25	Individual work and tutorials with instructors (research purpose and objectives, and methods)
30	***Presentations of assignment #4: research problem, theoretical foundations, and conceptual framework***
November	
1	***Presentations of assignment #4: research problem, theoretical foundations, and conceptual framework***
6	Grant writing skills and tutorial on purpose, objectives and methods
8	Lecture: Academic expectations and the student-supervisor relationship (survival tips for grad school). Group exercise: What are your expectations of a supervisor and supervisory committee and of yourselves, as grad students? Oral report.
12	***No classes - convocation***
13	***Presentations of assignment #5: research purpose and objectives, and review of appropriate methods.***
15	***Presentations of assignment #5: research purpose and objectives, and review of appropriate methods.***
20	Individual work and tutorials with instructors (complete proposal)
22	Individual work and tutorials with instructors (complete proposal)
27	***Presentations of assignment #6 a complete research proposal***
29	***Presentations of assignment #6 a complete research proposal***
December	
4	Individual work and tutorials with instructors - written proposals
6	Course review. Individual work and tutorials with instructors - written proposals ***December 6 Assignment # 7 due: Written research proposal***

Means of Evaluation

The course evaluation will be based on assignments completed during the term, which includes written assignments and presentations. There will be no final examination. Written assignments must be submitted as MS Word 97-2004 documents (.doc). Presentations and graphics must be presented as MS Power Point slides (.ppt) or in portable document format (.pdf). Be aware that presentations may not display the same on different computers (especially fonts), so check to be certain this will not be a problem before you present.

Assignment 1 (written): Brief statement of research interest;
maximum 800 words of text; due September 23 5%

This report outlines the nature of the topic the student intends to develop as a research proposal. Briefly: describe the topic; the need for research; your academic and professional background and experience relevant to conducting research on the topic; and provide a summary of necessary skills and knowledge to be enhanced or acquired for conducting successful research on the topic. This is a starting point only. It expected that the research focus will evolve as the problem is explored throughout the remainder of the course, and subsequently during the degree program.

Assignment 2 (written): Summary of relevant information sources (lists); due October 7 5%

Provide the following: title of this report; brief description of the research topic (no more than two sentences); list of relevant search engines; list of relevant journals; list of other relevant literature sources, including research and professional web sites. Provide a description of each source (owner, mission or purpose).

Assignment 3 (written): Literature review and annotated bibliography; due October 21 10%

The report begins with a brief review (1000 word limit) of the research topic, including: key theories and concepts; descriptions of seminal authors and their works; and current high impact authors. The annotated bibliography includes the citation and your abstracted review of information in the article including its content, the author's arguments, and most importantly, key words and your thoughts on the relevance of the article to your research interests noted for future reference. This written assignment must be formatted according to provided guidelines. The ***minimum*** number of annotated entries in the bibliography is 10 papers, book chapters, books, or other peer reviewed references (i.e. primary academic literature). The bibliography may include additional references that are not annotated or peer reviewed, but are relevant to the research topic.

Assignment 4 (presentation): Research problem, theoretical foundations, and conceptual framework of the system being studied;
Presentations in class on October 30 and November 1. 15%

Description of the problem (phenomenon under study and its importance), theoretical foundations, concepts concerning how you think the system works, and a diagrammatic representation (model) of the system being studied. The problem, theories and concepts are to be referenced to the literature. The conceptual model will be represented as a diagram of the 'system' under investigation, including factors, the nature of their interactions, intervention 'levers' that could influence design outcomes, and potential research foci.

Assignment 5 (presentation): Research problem statement, purpose and objectives, and review of relevant methods; Presentations in class November 15 and 19 15%

The research problem statement provides a brief overview of the phenomenon and a specific research problem (focus). The purpose describes the qualitative end point of the project (what you propose to achieve). Objectives or research questions are specific foci for the research, which if addressed will accomplish the purpose of the project. Provide a brief review of methods used by previous authors to address similar research objectives or questions.

Assignment 6 (presentation): Presentation of a complete research proposal; Presentations in class November 27 & 29. 20%

Assignment 7 (written): Complete research proposal; due December 6 30%

Written research proposal, maximum of 5 pages of text (introduction, purpose and objectives, overview of methods), accompanied by a conceptual model (diagram) of the system under study that highlights focal research elements, and a list of literature cited in the proposal.

Total 100%

Note: A passing grade in Assignment 7 is required to pass the course as a whole.

Grading Scale

Final grades will be reported as letter grades, with the final grade calculated according to the 4-point range. Assignment(s) will be evaluated by percentage grades, with their letter grade equivalents as shown.

Grade	Grade Point Value	4-Point Range	Percent	Description
A+	4.00	4.00	92.5-100	Outstanding - evaluated by instructor
A	4.00	3.85-4.00	85-92.49	Excellent - superior performance showing comprehensive understanding of the subject matter
A-	3.70	3.50-3.84	80-84.99	Very good performance
B+	3.30	3.15-3.49	76-79.99	Good performance
B	3.00	2.85-3.14	73-75.99	Satisfactory performance
B-	2.70	2.50-2.84	70-72.99	Minimum pass for students in the Faculty of Graduate Studies
C+	2.30	2.15-2.49	66-69.99	All final grades below B- are indicative of failure at the graduate level and cannot

				be counted toward Faculty of Graduate Studies course requirements.
C	2.00	1.85-2.14	63-65.99	
C-	1.70	1.50-1.84	60-62.99	
D+	1.30	1.15-1.49	56-59.99	
D	1.00	0.50-1.14	50-55.99	
F	0.00	0-0.49	0-49.99	

Notes:

- A student who receives a "C+" or lower in any one course will be required to withdraw regardless of their grade point average (GPA) unless the program recommends otherwise. If the program permits the student to retake a failed course, the second grade will replace the initial grade in the calculation of the GPA, and both grades will appear on the transcript.

Readings

The following are suggested readings for the course. Journal articles are available through University of Calgary Library digital resources. Books may be found in the library or purchased from the bookstore, Chapters/Indigo (www.chapters.indigo.ca), or Amazon (Amazon.ca).

Allio, R. 2003. Russell L. Ackoff, iconoclastic management authority, advocates "systemic" approach to innovation. Strategy & Leadership 31(3): 19-26.

Bradley, C. and E. Green. 2011. Reflective journaling. Centre for teaching and Learning. University of Regina. http://www.uregina.ca/ctl/blog/reflective-journaling

Dorst, K. (2008). Design research: a revolution-waiting-to-happen. Design Studies 29: 4-11.

Friedman, K. 2003. Theory construction in design research: criteria, approaches, and methods. Design Studies 24:507-522.

Guthery, F. 2008. Statistical ritual versus knowledge accrual in wildlife science. The Journal of Wildlife Management 72(8): 1872-1875.

Kuipers, T.A., Vos, R., and Hauke, S. 1992. Design Research Programs and the Logic of Their Development. Erkenntinis 37: 37-63.

Maxwell, J.A. 2013. Chapter 3 Conceptual framework: What do you think is going on? Pages 39-72 *in* L. Bickman and D. Rog (eds.) Qualitative research design: An interactive approach. Sage Publications Inc., Los Angeles.

Ortlipp, M. 2008. Keeping and using reflective journals in the qualitative research process. The Qualitative Report 13(4): 695-705.

Zerubavel, E. 1999. The clockwork muse: A practical guide to writing theses, dissertations, and books. Harvard University Press. 128 pp.

Web Sites by Topic

Annotated bibliographies: http://www.writing.utoronto.ca/advice/specific-types-of-writing/annotated-bibliography

Reflective journaling: http://www.uregina.ca/ctl/blog/reflective-journaling

Additional recommended Reading

Antrop, M. (2003). Expectations of scientists towards interdisciplinary and transdisciplinary research. Interdisciplinary and transdisciplinary landscape studies: potential and limitations. B. Tress, G. Tress, A. van der

Valk and G. Fry. Wageningen, Netherlands, Delta Series 2: 44-54.

Bayazit, N. (2004). "Investigating design: A review of forty years of design research." Design Issues 20(1): 16-29.

Buchanan, R. 2001. Design research and the new learning. Design Issues 17(4):3-23

Castán Broto, V., M. Gislason, et al. (2009). "Practicing interdisciplinarity in the interplay between disciplines: experiences of established researchers." Environmental Science & Policy 12(7): 922-933.

Dalrymple, J. and W. Miller (2006). "Interdisciplinarity: a key for real-world learning." Planet 17: 29-31.

Dimagio, P.J. (1995). Comments on "What Theory is Not". Administrative Science Quarterly, 40(3), 391-397.

Dorst, K. (2008). Design research: a revolution-waiting-to-happen. Design Studies 29: 4-11.

Downton, Peter (2005). Design Research. Melbourne, AUS: RMIT University Press.

Eastman C., W.C. Newstettler and W.M. McCracken, eds. 2001. Design knowing and learning: cognition in design education. Elsevier, Oxford.

Friedman, K. 2003. Theory construction in design research: criteria, approaches, and methods. Design Studies 24:507-522.

Guthery, F. 2008. Statistical ritual versus knowledge accrual in wildlife science. The Journal of Wildlife Management 72(8): 1872-1875.

Koestler, A. (1973). The Act of Creation. New York, NY: Dell Publishing Co., Inc.

Kuhn, T. (1970). The Structure of Scientific Revolutions. Chicago, IL: University of Chicago Press.

Kuipers, T.A., Vos, R., & Hauke, S. (1992). Design Research Programs and the Logic of Their Development. Erkenntinis, Kluwer Academic Publishers, 37, 37-63.

Lakatos, I., & Musgrave, A. (eds.) (1974). Criticism and the Growth of Knowledge. London, UK: Cambridge University Press.

Lawson, B. (2007). What Designers Know. Burlington, MA: Architectural Press, Elsevier Ltd.

Lieblich, A., Tuval-Mashiach, R., & Zilber, T. (1998). Narrative Research: Reading, Analysis, and Interpretation. Thousand Oaks, CA: Sage Publications, Inc.

Locke, L.F., Spirduso, W.W., & Silverman, S.J. (1993). Proposals that Work. Newbury Park, CA: Sage Publications.

Magee, B. (1973). Popper. London, UK: Fontana.

Mason, J. (1996). Qualitative Researching. Thousand Oaks, CA: Sage Publications, Inc.

McGregor, S. L. T. (2004). "The nature of transdisciplinary research and practice." [unpublished, but I like her synthesis]

Morgan, G. (Ed.) (1983). Beyond Method, Strategies for Social Research. Thousand Oaks, CA: Sage Publications, Inc.

Nicolescu, B. (2005). Transdisciplinarity past, present and future. Moving Worldviews. Soesterberg, the Netherlands.

Oxman, R. 2004. Think-maps: teaching design thinking in design education. Design Studies 25:63-91.

Pacanowsky, M. (1995). "Team tools for wicked problems." Organizational Dynamics, 23(3), 36-52.

Popper, K.R. (1992). The Logic of Scientific Discovery, London, UK: Routeledge.

Schön, D. A. (1983) The Reflective Practitioner: How professionals think in action. London, UK: Temple Smith

Schön, D. A. (1987) Educating the Reflective Practitioner. San Francisco, CA: Jossey-Bass.

Schön, D.A. and G. Wiggins. 1992. Kinds of seeing and their functions in designing. Design Studies 13:135-156.

Simon, H.A. (1996). The Sciences of the Artificial. Cambridge, MA: MIT Press.

Slife, B.D., & Williams, R.N. (1995). What's Behind the Research? Thousand Oaks, CA: Sage Publications, Inc.

Sommer, R., & Sommer, B.B. (1980). A Practical Guide to Behavioral Research. New York, NY: Oxford University Press.

Sutton, R.I., & Staw, B.M. (1995). What Theory is Not. Administrative Science Quarterly, 40(3), 371-384.

Tress, B., G. Tress, et al. (2009). "Integrative research on environmental and landscape change: PhD students' motivations and challenges." Journal of Environmental Management 90(9): 2921-2929.

Wener, R. (2008). "History and Trends in Environmental Design Research (EDR)." Journal of Architectural and Planning Research 25(4): 282-97.

Weick, K.E. (1995). What Theory is Not, Theorizing Is. Administrative Science Quarterly, 40(3), 385-390.

Zeisel, J. (1988). Inquiry by Design. New York, NY: Cambridge University Press.

Zerubavel, E. 1999. The clockwork muse: A practical guide to writing theses, dissertations, and books. Harvard University Press. 128 pp.

Special Budgetary Requirements
None

Notes:

1. Written work, term assignments and other course related work may only be submitted by e-mail if prior permission to do so has been obtained from the course instructor. Submissions must come from an official University of Calgary (ucalgary) email account.

2. It is the student's responsibility to request academic accommodations. If you are a student with a documented disability who may require academic accommodation and have not registered with the Disability Resource Centre, please contact their office at 220-8237. (http://www.ucalgary.ca/drc/node/46) Students who have not registered with the Disability Resource Centre are not eligible for formal academic accommodation. You are also required to discuss your needs with your instructor no later than fourteen (14) days after the start of this course.

3. Plagiarism - Plagiarism involves submitting or presenting work in a course as if it were the student's own work done expressly for that particular course when, in fact, it is not. Most commonly plagiarism exists when:(a) the work submitted or presented was done, in whole or in part, by an individual other than the one submitting or presenting the work (this includes having another impersonate the student or otherwise substituting the work of another for one's own in an examination or test),(b) parts of the work are taken from another source without reference to the original author,(c) the whole work (e.g., an essay) is copied from another source, and/or,(d) a student submits or presents work in one course which has also been submitted in another course(although it may be completely original with that student) without the knowledge of or prior agreement of the instructor involved. While it is recognized that scholarly work often involves reference to the ideas, data and conclusions of other scholars, intellectual honesty requires that such references be explicitly and clearly noted. Plagiarism is an extremely serious academic offence. It is recognized that clause (d) does not prevent a graduate student incorporating work previously done by him or her in a thesis. Any suspicion of plagiarism will be reported to the Dean, and dealt with as per the regulations in the University of Calgary Graduate Calendar.

4. Information regarding the Freedom of Information and Protection of Privacy Act (http://www.ucalgary.ca/secretariat/privacy) and how this impacts the receipt and delivery of course material

5. Emergency Evacuation/Assembly Points (http://www.ucalgary.ca/emergencyplan/assemblypoints)

6. Safewalk information (http://www.ucalgary.ca/security/safewalk)

7. Contact Info for: Student Union (http://www.su.ucalgary.ca/page/affordability-accessibility/contact); Graduate Student representative(http://www.ucalgary.ca/gsa/) and Student Ombudsman's Office (http://www.su.ucalgary.ca/page/quality-education/academic-services/student-rights).