

**C. Cormack Gates**

**Fall 2012**

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PF 2105 hours by appointment

**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 and use mind mapping, conceptual models, journaling, memoing, and annotated bibliographies for supporting research proposal development.
- 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 and individual exercises, tutorials, and discussion 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 (diagrammatic model) of the research problem, then write and present an academic proposal on a topic of their choice.

**Content: Topic Areas & Detailed Class Schedule**

### 1. Week 1 (September 10 - 14)

Course orientation and expectations  
Introduction to environmental design research  
Introduction to academic proposals: What is a thesis research proposal?  
What skills are necessary and useful for planning and conducting thesis research?

Individual research interests of students  
Exercise: Form thematic discussion groups; discuss the range of research interests in your group. Present a verbal report on research interests in each group.

Introduction of assignment #1: Brief statement of research interest, due September 21

### 2. Week 2 (September 17 - 21)

Lecture on ways of knowing - theoretical foundations  
Workshop on critical thinking (guest convenor)

Group exercise: How do knowledge, skills and beliefs inform the way a person thinks about their research interest - group report. Key questions to address: What are you bringing to your thesis research; how is it relevant; how does it influence the way you think?

Introduction to using the literature and information management (literature search, annotated bibliographies, literature review, and reference management)

Tutorial: Use of the U of C library catalogues, electronic search engines and digital library - at the Library with EVDS Librarian and instructor

Introduce assignment #2; information sources, due October 5  
Introduce assignment #3; annotated bibliography, due October 19

September 21: submit assignment #1 - brief statement of research interest

### 3. Week 3 (September 24 - 28) Preparing to frame a research problem

Preparing an annotated bibliography  
Group exercise: Bibliography and literature review of an agreed topic

Exploring the relationship between your background, your interests and the literature  
How to define a research topic, frame a problem, and develop it into a research question/ statement.  
Introduction to idea journaling and memoing

### 4. Week 4 (October 1 - 5)

Group exercise: develop and describe the following for an assigned (agreed) group topic: Key concepts and theories, seminal authors, evolution of the field or subject; recent important contributions and authors or precedent cases; key knowledge gaps and evident design research opportunities or needs.

Instructor works with students on annotated bibliographies

Mind mapping, conceptual modeling and research problem framing  
Framing and conceptualizing the research problem: relationship between concepts, theory, precedents, and context for a design research project

Group exercise: draft and present a basic conceptual model (diagram) of a research problem

Tutorials and individual work with instructor on research concept models

Introduce assignment #4; conceptual model, due November 1

October 5: Assignment #2 due - Information sources

5. Week 5 (October 8 - 12: Block Week, no classes)

6. Week 6 (October 15 - 19)

Components of an academic proposal and the special nature of grant proposals

Lecture and examples of framing a research problem

Research purpose and objectives or questions

Nature and examples of purpose statements and objectives

Group exercise: framing a research problem

Introduce assignment #5: Research problem statement, purpose and objectives, due November 8

October 19: Assignment # 3 due - annotated bibliography

7. Week 7 (October 22 - 26)

Relationship between research questions and methods

Overview of quantitative and qualitative research methods within different contexts (social, cultural, built and biophysical): descriptive and analytical surveys, case studies, critical and analytic thinking, hypothesis formulation and testing, sampling theory, descriptive statistics, and concepts of inferential statistics, linear regression, and non-parametric techniques

How to review literature for appropriate methods

Introduce assignment #6: overview of methods, due November 15

8. Week 8 (October 29 - November 2)

Group exercise: Review selected research literature for research questions and appropriate methods - in class report

November 1: presentations of assignment # 4 - research concept models (diagrams)

9. Week 9 (November 5 - 9)

Individual tutorials/work with instructor on research problem statements, questions and methods

November 8: assignment # 5 - presentations of research problem statements and questions

10. Week 10 (November 12 -16, University closed on November 12)  
Academic expectations and the supervisor-student relationship  
Roles and responsibilities of supervisors and students  
Handbook of graduate supervision  
Selecting and working with a supervisor  
Time management and other graduate student survival skills

November 15: presentations of assignment 6: Overview of methods

11. Week 11 (November 19 - 23)  
Individual tutorials/work with instructor on individual research proposals

12. Week 12 (November 26 - 30)  
November 27 and 28: presentations of Assignment # 7: research proposals

13. Week 13 (December 3 - 7)  
Individual tutorials/work with instructor to incorporate feedback from presentations

Assignment 8 due December 4: final 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).

*Assignment 1 (written):* Brief statement of research interest; maximum 800 words of text; due September 21

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 is expected that research 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 5

10%

Provide the following: title of the 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.

*Assignment 3 (written):* Annotated bibliography; due October 19

10%

The report begins with a brief review (1000 word limit) of the research topic, including key concepts and theories, seminal authors and their works, and current high impact authors. The annotated bibliography includes the citation and your abstracted review of material pertaining to your research topic, with key words and key thoughts noted for your future reference. It must be formatted according to provided guidelines. The **minimum** number of entries in the annotated bibliography is 10 papers, book chapters, books, or other peer reviewed references (i.e. primary academic literature).

*Assignment 4 (presentation):* Conceptual model of the system being studied;  
November 1

10%

Conceptual model of the research problem referenced to the literature, 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;  
November 8

10%

The research problem statement describes the global nature of the problem, key concepts, theories and important design criteria, and a specific research problem. The purpose describes the end point of the project. Objectives or research questions are specific foci for the research, which if addressed will accomplish the purpose of the project.

*Assignment 6 (presentation):* Review of methods; November 15

10%

Brief overview of methods used by previous authors to address similar research objectives or questions.

*Assignment 7 (presentation):* Presentation of a complete research proposal; November 27 & 29

15%

*Assignment 8 (written):* Completed research proposal; due December 4

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 literature cited in the proposal.

Total

100%

Note: A passing grade in Assignment 8 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](http://www.chapters.indigo.ca)), or Amazon ([Amazon.ca](http://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. *Erkenntnis* 37: 37-63.

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>

#### 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.

Dimaggio, 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. *Erkenntnis*, 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.
- Maxwell, J.A. (2005). *Qualitative Research Design*. 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: Routledge.



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

The University has approved supplemental fees for the following courses:  
2012/2013 SUPPLEMENTARY COURSE FEES

ARST 484/EVDA 580/EVDS 603 - Studio I Design Thinking	\$92.00
ARST 483/EVDA 501/EVDS 601 – Interdisciplinary Seminar	\$200.00
ARST 444/EVDA 582 - Studio II in Architecture	\$92.00
EVDA 621 – Intro to Design Theories	\$200.00 (for new-to-EVDS M1 students only)
EVDA 682.02 – Intermediate Studio	\$92.00
EVDA 682.04 - Comprehensive Arch. Studio	\$92.00

EVDA 782 - Senior Arch. Studio (all sections)	\$92.00
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**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>).