

School of Information Management
INFO515: Experimental and Design Science
Research Strategies
Trimester 2, 2015
COURSE OUTLINE

Names and Contact Details

Course coordinator

Pedro Antunes

Lecturers

Pedro Antunes (pedro.antunes@vuw.ac.nz) RH526

Yi-Te Chiu (yi-te.chiu@vuw.ac.nz) RH412

Trimester Dates

Teaching Period: Monday 13th July – Sunday 18th October

Withdrawal from Course

1. Your fees will be refunded if you withdraw from this course on or before Friday 24th July 2015.
2. The standard last date for withdrawal from this course is Friday 25th September. After this date, students forced to withdraw by circumstances beyond their control must apply for permission on an 'Application for Associate Dean's Permission to Withdraw Late' including supporting documentation. The application form is available from either of the Faculty's Student Customer Service Desks or [online](#)

Class Times and Room Numbers

Days: Mondays

Time: 4:00 – 7:00pm

Room: RH 421

Course Delivery

Weekly seminars/debates.

Expected Workload

To achieve satisfactory grades, you will need to spend at least 12.5 hours per week on INFO515, including time spent in class. Some aspects of the course will require less time, whereas others will require slightly more, depending on your previous knowledge of the topic. Before each session, please read the material for the week's topic and be ready to discuss the readings and other set work prepared for the class.

Prescription

An examination of how to design and conduct experiments to investigate research problems; and how to design, build, and evaluate artefacts to conduct design science research.

Course Learning Objectives

Students who pass this course should be able to:	
1	Critically assess the appropriateness of both experimental research and Design Science research for dealing with different types of research questions.
2	Demonstrate an understanding of the key elements of both experimental and Design Science research.
3	Design a research project that uses an experimental or a Design Science approach.

Assessment

Assessment items & workload per item	%	CLOs	Due Dates
1 Position paper (max 2 pages)	14	1,2	19 July
2 Weekly research highlights (max 1 page), total of 6	36	1,2	4 DS weeks and 2 ER weeks, on Sunday (pick your weeks)
3 Draft DS research plan (max 10 pages)	50	1,2,3	18 October

The Assessment Handbook will apply to all VUW courses, see <http://www.victoria.ac.nz/documents/policy/staff-policy/assessment-handbook.pdf>

If you cannot complete an assignment or sit a test or examination, refer to www.victoria.ac.nz/home/study/exams-and-assessments/aegrotat

Any student who is concerned that they have been, or might be, unable to meet any of the mandatory course requirements because of exceptional personal circumstances, should contact the course coordinator as soon as possible.

Reading list

Week 1: DS Foundations: Science of Design

1. H. Simon, *The Sciences of the Artificial* (Cambridge, M A: MIT Press, Third Edition, 1999). Chapter 3.
2. Nunamaker Jr, J. F., & Chen, M. (1990, January). Systems development in information systems research. *Proceedings of the Twenty-Third Annual Hawaii International Conference on System Sciences* (pp. 631-640). IEEE.
3. Orlikowski, W. J., & Iacono, C. S. (2001). Research commentary: Desperately seeking the "IT" in IT research—A call to theorizing the IT artifact. *Information systems research*, 12(2), 121-134.

Week 2: DS Foundations: Science of Design Practice

1. Cross, N. (1982). Designerly ways of knowing. *Design studies*, 3(4), 221-227.
2. Cross, N. (2001). Designerly ways of knowing: Design discipline versus design science. *Design issues*, 17(3), 49-55.
3. Schön, D. A. (1995). Knowing-in-action: The new scholarship requires a new epistemology. *Change: The Magazine of Higher Learning*, 27(6), 27-34.

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

Week 3: DS Foundations: Wicked Problems

1. Rittel, H. W., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy sciences*, 4(2), 155-169.
2. Goel, V., & Pirolli, P. (1992). The structure of design problem spaces. *Cognitive science*, 16(3), 395-429.
3. Conklin, J. (2006). Wicked Problems and Social Complexity. In *Dialogue Mapping: Building Shared Understanding of Wicked Problems*, John Wiley & Sons.
4. Denning, P. J. (2007). Mastering the mess. *Communications of the ACM*, 50(4), 21-25.
5. Farrell, R., & Hooker, C. (2013). Design, science and wicked problems. *Design Studies*, 34(6), 681-705.

Week 4: DS Core: Design Science

1. Hevner, A., S. March, J. Park, and S. Ram (2004) Design science in information systems research. *MIS Quarterly* 28 (1), pp. 75–105.
2. Hevner, A., & Chatterjee, S. (2010). Introduction to design science research. In *Design Research in Information Systems* (pp. 1-8). Chapter 1. Springer US.
3. Hevner, A., & Chatterjee, S. (2010). Design science research in information systems (pp. 9-22). Chapter 2. Springer US.

Week 5 DS Core: DS Research Practice

1. Gregor, S., & Hevner, A. R. (2013). Positioning and presenting design science research for maximum impact. *MIS quarterly*, 37(2), 337-356.
2. Iivari, J. (2007). A paradigmatic analysis of information systems as a design science. *Scandinavian Journal of Information Systems*, 19(2), 5.

Week 6 DS Core: DS Methodology

1. Peffers, K., Tuunanen, T., Rothenberger, M. A., & Chatterjee, S. (2007). A design science research methodology for information systems research. *Journal of management information systems*, 24(3), 45-77.
2. Kuechler, B., & Vaishnavi, V. (2008). On theory development in design science research: anatomy of a research project. *European Journal of Information Systems*, 17(5), 489-504.

Week 7 DS Methods

1. Sein, M. K., Henfridsson, O., Purao, S., Rossi, M., & Lindgren, R. (2011). Action Design Research. *MIS Quarterly*, 35(1), 37-56.
2. Baskerville, R., Pries-Heje, J., & Venable, J. (2009). Soft design science methodology. In *proceedings of the 4th international conference on design science research in information systems and technology* (p. 9). ACM.
3. Alturki, A., Gable, G. G., & Bandara, W. (2011). A design science research roadmap. In *Service-Oriented Perspectives in Design Science Research* (pp. 107-123). Springer Berlin Heidelberg.

Week 8 DS Evaluation

1. Venable, J., Pries-Heje, J., & Baskerville, R. (2012). A comprehensive framework for evaluation in design science research. In *Design Science Research in Information Systems. Advances in Theory and Practice* (pp. 423-438). Springer Berlin Heidelberg.
2. Antunes, P., Herskovic, V., Ochoa, S. F., & Pino, J. A. (2012). Structuring dimensions for collaborative systems evaluation. *ACM Computing Surveys (CSUR)*, 44(2), 8.
3. Cleven, A., Gubler, P., & Hüner, K. M. (2009, May). Design alternatives for the evaluation of design science research artifacts. *Proceedings of the 4th International Conference on Design Science Research in Information Systems and Technology* (p. 19). ACM.

Week 9 DS Examples

1. Antunes, P., Simões, D., Carriço, L. and Pino, J. (2013) An End-User Approach to Business Process Modeling. *Journal of Network and Computer Applications*, 36(6), pp. 1466-1479.
2. Nguyen, T., Antunes, P., Johnstone, D., Ha, C. Building an Enterprise Ontology of Business Process Crowdsourcing: A Design Science Approach.
3. Nguyen, T., Antunes, P., Johnstone, D. A Design Science Method for Grounding Experience and Expertise.

Week 10 ER core: Experimental Methodology

1. Shadish, W.R. Cook, T.D., & Campbell, D.T. (2002). *Experimental and quasi-experimental designs for generalized causal experiments*. NY: Houghton Mifflin. (Chapter 1)
2. Colquitt, J. (2008). Publishing laboratory research in AMJ: A question of when, not if. *Academy of Management Journal*, 51, 616-620.
3. Grant, A.M., & Wall, T.D. (2009). The neglected science and art of quasi-experimentation: Why-to, when-to, and how-to advice for organizational researchers. *Organizational Research Methods*, 12, 653-686.
4. Cox, T., Karanika, M., Griffiths, A., Houdmont, J. (2007). Evaluating organizational-level work stress interventions: Beyond traditional methods. *Work and Stress*, 21, 348-362.

Week 11 Mix-methods and ER Examples

1. Venkatesh, V., Brown, S. A., & Bala, H. (2013). Bridging the qualitative-quantitative divide: Guidelines for conducting mixed methods research in information systems. *MIS Quarterly*, 37(1), 21-54.
2. Sutanto, J., Palme, E., Tan, C. H., & Phang, C. W. (2013). Addressing the personalization-privacy paradox: An empirical assessment from a field experiment on smartphone users. *MIS Quarterly*, 37(4), 1141-1164.
3. Liu, D., Li, X., & Santhanam, R. (2013). Digital games and beyond: What happens when players compete. *MIS Quarterly*, 37(1), 111-124.
4. Bring an article that employed interesting experimental or mix-method research design.

Week 12 Special topic: Conducting Research on Higher-Level Phenomena

1. Smith, D.B., Schneider, B., & Dickson, M.W. (2006). Meso organizational behavior: Comments on the third paradigm. In S. Clegg, C. Hardy, T. Lawrence, & W.R. Nord (Eds.), *The SAGE handbook of organization studies* (pp. 149-164). Thousand Oaks, CA: Sage.
2. Klein, K. J., & Kozlowski, S. W. J. (2000). From micro to meso: Critical steps in conceptualizing and conducting multilevel research. *Organizational Research Methods*, 3(3), 211–236.
3. Bliese, P. D., Chan, D., & Ployhart, R. E. (2007). Multilevel methods: Future directions in measurement, longitudinal analyses, and nonnormal outcomes. *Organizational Research Methods*. 551-563.
4. Burton-Jones, A., & Gallivan, M. J. (2007). Toward a deeper understanding of system usage in organizations: A multilevel perspective. *MIS Quarterly*, 657–679.

Link to general information

For general information about course-related matters, go to <http://www.victoria.ac.nz/vbs/studenthelp/general-course-information>

Note to Students

Your assessed work may also be used for quality assurance purposes, such as to assess the level of achievement of learning objectives as required for accreditation and academic audit. The findings may be used to inform changes aimed at improving the quality of VBS programmes. All material used for such processes will be treated as confidential, and the outcome will not affect your grade for the course.
