TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI

VICTORIA
UNIVERSITY OF WELLINGTON

School of Information Management

INFO515 EXPERIMENTAL AND DESIGN SCIENCE RESEARCH STRATEGIES

Trimester 2, 2016

COURSE OUTLINE

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.

Trimester Dates
Teaching Period: Monday 11th July – Friday 14th October

Withdrawal from Course
1. Your fees will be refunded if you withdraw from this course on or before Friday 22nd July 2016.
2. The standard last date for withdrawal from this course is Friday 23rd 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

Course Delivery
Weekly seminars/debates.

Class Times and Room Numbers
Days: Mondays
Time: 12:40 – 15:30
Room: RHMZ06 (Rutherford House, Mezzanine Floor, Room 06)

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) RWW208
Andreas Drechsler (andreas.drechsler@vuw.ac.nz) RH502

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.

Assessment

	Assessment item	%	CLOs	Due Date
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, one day before the corresponding lecture (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

Reading list

Week 1: **DS Foundations: Science of Design** (Pedro)
1. H. Simon, The Sciences of the Artificial (Cambridge, M A: MIT Press, Third Edition, 1999). Chapter 5 – Creating the artificial.
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** (Pedro)
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** (Pedro)
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. Denning, P. J. (2007). Mastering the mess. Communications of the ACM, 50(4), 21-25.
4. Farrell, R., & Hooker, C. (2013). Design, science and wicked problems. Design Studies, 34(6), 681-705.

Week 4: **DS Core: Design Science in Information Systems** (Andreas)
1. Hevner, A., S. March, J. Park, and S. Ram (2004) Design science in information systems research. MIS Quarterly 28 (1), 75–105.
2. Gregor, S., & Hevner, A. R. (2013). Positioning and presenting design science research for maximum impact. MIS Quarterly, 37(2), 337-356.
3. Gill, T. G., & Hevner, A. R. (2013). A Fitness-Utility Model for Design Science Research. ACM Transactions on Management Information Systems, 4(2), 5:1–5:24.
4. Baskerville, R. 2008. "What design science is not," European Journal of Information Systems 17(5), 441–443.

Week 5: DS Core: Design Science in Management Research (Andreas)
1. van Aken, J. E. (2004). Management Research Based on the Paradigm of the Design Sciences: The Quest for Field-Tested and Grounded Technological Rules. Journal of Management Studies, 41(2), 219–246.
2. Tranfield, D., Huff, A., & Van Aken, J. E. (2006). Management as a Design Science Mindful of Art and Surprise. Journal of Management Inquiry, 15(4), 413–424.
3. Drechsler, A. (2013). Design Science as Design of Social Systems - Implications for Information Systems Research. Journal of Information Technology Theory and Application, 14(4), 5–26.

Week 6: DS Core: DS Approaches and Methodology (Andreas)
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. Iivari, J. (2015). Distinguishing and contrasting two strategies for design science research. European Journal of Information Systems, 24(1), 107–115.
3. Sein, M. K., Henfridsson, O., Purao, S., Rossi, M., & Lindgren, R. (2011). Action Design Research. MIS Quarterly, 35(1), 37-56.

Week 7: DS Core: DS Contributions (Andreas)
1. Mandviwalla, M. (2015). "Generating and Justifying Design Theory," Journal of the Association for Information Systems (16:5)
2. Gregory, R. W., and Muntermann, J. (2014). "Research Note—Heuristic Theorizing: Proactively Generating Design Theories," Information Systems Research (25)3, 639–653.
3. Baskerville, R. L., Kaul, M., & Storey, V. C. (2015). Genres of inquiry in design-science research: Justification and evaluation of knowledge production. MIS Quarterly, 39(3), 541–564.

Week 8 DS Evaluation (Andreas)
1. Venable, J., Pries-Heje, J., & Baskerville, R. (2016). FEDS: a Framework for Evaluation in Design Science Research. European Journal of Information Systems, 25(1), 77–89.
2. Prat, N., Comyn-Wattiau, I., & Akoka, J. (2015). A Taxonomy of Evaluation Methods for Information Systems Artifacts. Journal of Management Information Systems, 32(3), 229–267.
3. Venable, J. R. (2015). Five and Ten Years on: Have DSR Standards Changed? In B. Donnellan, M. Helfert, J. Kenneally, D. VanderMeer, M. Rothenberger, & R. Winter (Eds.), New Horizons in Design Science: Broadening the Research Agenda (pp. 264–279). Springer International Publishing.

Week 9 DS Examples (Pedro)
1. Nguyen, T., To Establish Crowdsourcing as an Organisational Business Process: An Exploratory Study. (PhD Manuscript)
2. Simões, D. An End-User Approach to Business Process Modelling. (PhD Manuscript)

Week 10 ER core: Experimental Methodology (Yi-Te)
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 (Yi-Te)
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 (Yi-Te)
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.

Student Feedback
The course was new in 2015 and had just 2 students. Informal feedback indicated the course was adequately structured. Though parts of the course have be updated to reflect advances in knowledge.
Student feedback on University courses may be found at
www.cad.vuw.ac.nz/feedback/feedback_display.php

Communication of Additional Information
Email may be used as a form of communication; hence it is vital that students check their email regularly. The University has provided each student with a student email address and all email correspondence will be sent to that email address. Should a student forward his/her email to another email provider, it is her/his responsibility to ensure that that forwarded mailbox is capable of receiving the emails. Students must check their student records and ensure the appropriate email address is set. You can do this through My Victoria, Student Records. Not receiving an email will not be a valid excuse for missing information.

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.

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