

15336 Systems Thinking for Managers

Course area UTS: Design, Architecture and Building

Delivery Autumn 2015; block mode; City

Credit points 6cp

Requisite(s) [15315](#) Project Management Principles

These requisites may not apply to students in certain courses.

There are also course requisites for this subject. See [access conditions](#).

Result type Grade and marks

Subject coordinator

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Consultation: by appointment or email

Teaching staff

Dr. Shankar Sankaran (as above)

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Consultation: At the block workshop or email

Subject description

The subject introduces the concepts of systems to help address management problems. It examines both hard and soft systems thinking approaches to develop an understanding of the interrelationships between various elements of a project and the environment in which they are executed. It equips students with systems diagnosis, systems thinking and business modelling tools to analyse issues arising in projects and design ways to maintain internal stability within a project while increasing its adaptive capability, and to deal with factors affecting the project due to factors beyond its control in its external environment.

Subject objectives

This subject contributes to the students' learning as follows:

1. Develop and demonstrate effective oral communication through presentation of an organisational analysis using system diagnostic concepts taught in the class.
2. Demonstrate an ability to analyse and present a way forward to improve a situation at work by applying systems methodologies taught in the class.
3. Explain the basic concepts of systems thinking as applied to management problems. Apply Checkland's soft systems thinking methodology and Beer's Viable Systems Models in a project environment.
4. Identify interrelationships between elements of a project and its environments.
5. Able to use systems thinking and systems diagnosis tools to address issues arising in projects.
6. Develop business modelling skills to be applied to manage projects.
7. Demonstrate an ability to apply computer software to create and analyse causal loop diagrams and build stock-and-flow simulation models.
8. Demonstrate the ability to apply critical thinking in both spoken and written formats.

9. Demonstrate a systemic thinking approach to practice.

This subject also contributes to the faculty's five CAPRI Graduate Attribute Categories (see 'Graduate Attribute Development') and the following course intended learning outcomes:

- Ability to make ethical judgements in project contexts (Ethical Judgements) (A.1)
- Ability to effectively use oral communication in project environments (Oral Communication) (C.1)
- Ability to effectively communicate in writing in project environments (Written Communication) (C.2)
- Ability to develop and adapt PM knowledge to meet contextual demands (Knowledge Adaptation) (I.2)
- Ability to think systemically and use systems thinking approaches (Systems Thinking) (I.3)
- Ability to apply advanced PM knowledge (Advanced Knowledge) (P.2)
- Ability to understand PM Information System concepts (Information Systems Concepts) (P.4)
- Ability to think critically (Critical Engagement) (R.1)
- Ability to define and conduct research projects (Research) (R.2)

Teaching and learning strategies

Mixed-mode block workshop alternating between delivery of content and facilitated group exercises.

Content

- Review of systems thinking concepts: The beer game, and debriefing simulation;
- System dynamics: Stock and flow diagrams;
- System archetypes;
- Applying system dynamics to project management;
- Rich pictures exercise in a project management context;
- Beer's Viable Systems Model, and its application;
- Systems thinking and complex projects.

Program

Week/Session	Dates	Description
1-3	Mar 11	Pre-workshop assignment
		Notes: See assignment requirements posted on the assignment folder in UTS online
4	Mar 16	Workshop Day 1
		Notes: Overview of the workshop Introduction to complex systems The Beer Game and debriefing simulation Review of systems thinking concepts System dynamics - Causal loop diagrams
		Readings: Textbook Chapter 1 Maani and Cavana 2007 Kim 1995 Wolstenhome 2004 Sterman 2001

4 Mar 17 Workshop Day 2

Notes:

Checkland's soft systems methodology (SSM)
Rich pictures exercise in a project management context
Applying SSM to project management

Notes:

Textbook Ch 5
Monk and Howard 1998
Winter 2006
Pollack 2009

4 Mar 18 Workshop Day 3

Notes:

System archetypes
Stock and Flow diagrams
Applying system dynamics to project management

Readings:

Textbook Chapter 2
Kim and Lannon 1997
Kim and Anderson 1998
Lane 2000
Goodman et al. 2004
Lyenis and Ford 2007

4 Mar 19 Workshop Day 4

Notes:

Beer's viable systems model (VSM)
Applying VSM
Systems thinking and complex projects
Class Presentation – Organizational Analysis

Readings:

Textbook Ch 3
Vidgen 1998
Jackson 2006

May 4 Post-workshop assignment

Notes:

See assignment details posted on UTS online

Due: 9:00 AM May 4 2015

Assessment

Assessment task 1: Pre-workshop assignment

Objective(s): This task addresses the following subject learning objectives:

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This task also addresses the following course intended learning outcomes that are linked with a code to indicate one of the five CAPRI graduate attribute categories (e.g. C.1, A.3, P.4, etc.):

C.2, I.3 and R.1

Weight: 10%

Due: 9.00am Monday 9 March 2015

Further information: Individual assignment task. Assignment details will be posted in the UTS online Assignments Folder.

Assessment task 2: Group Assignment

Objective(s): This task addresses the following subject learning objectives:

1, 3, 4, 5, 6, 7 and 8

This task also addresses the following course intended learning outcomes that are linked with a code to indicate one of the five CAPRI graduate attribute categories (e.g. C.1, A.3, P.4, etc.):

A.1, C.1, I.3 and P.4

Weight: 30%

Due: During the block workshop

Further information: Targeted exercises based on topics taught at the block workshop

Assessment task 3: Individual Assignment

Objective(s): This task addresses the following subject learning objectives:

2, 3, 5 and 9

This task also addresses the following course intended learning outcomes that are linked with a code to indicate one of the five CAPRI graduate attribute categories (e.g. C.1, A.3, P.4, etc.):

I.2, I.3, P.2 and R.2

Weight: 60%

Due: 9.00am Monday 4 May 2015

Further information: Individual assignment task. Assignment details will be posted in the UTS online Assignments Folder.

Required texts

Reynolds, M & Holwell, S, (Eds.). 2010. Systems Approaches to Managing Change: A Practical Guide, 1st Edn., Springer, London.

This book is available as an e-book from UTS Library.

Read e-readings posted for the subject stored in UTS library.

<http://www.lib.uts.edu.au/search/ereadings>

Recommended texts

Checkland, P. & Poulter J. 2006, Learning for Action: A Short Definitive Account of Soft Systems Methodology and its Use for Practitioners, Teachers and Students, John Wiley, Chichester.

Jackson, M. 2003, Systems Thinking: A Creative Holism fro Managers, Wiley, New Jersey.

Morecroft, J. 2007, Strategic Modelling and Business Dynamics: A Feedback Systems Approach, John Wiley, Chichester.

Senge, P. 2006, The Fifth Discipline: The Art and Practice of the Learning Organization, 2nd edn. Random House, London.

References

Anderson, V. and Johnson, L. 1997, System Thinking Basics: From Concepts to Causal Loops, Pegasus Communications, Waltham, MA.

Beer, S. 1984. The viable systems model: Its provenance, development, methodology and pathology, Journal of Operational Research Society, 35, pp. 7-26.

Beer, S. 1985, Diagnosing the System for Organizations, Wiley, Chichester.

Boardman, J. and Sauser, B., 2008, Systems Thinking: Coping with 21st Century Problems, CRC Press, Boca Raton.

Capra, F. 1996, The Web of Life: A New Synthesis of Mind and Matter, Flamingo, London.

Checkland, P. 1999, Systems Thinking, Systems Practice: Includes a 30-year Perspective, Wiley, New York.

Checkland, P. and Holwell, S. 1998. Information, Systems and Information Systems, Chichester: Wiley.

Checkland, P. and Scholes, J. 1990, Soft Systems Methodology in Action, Wiley, New York.

Checkland, P. 2000, The emergent properties of SSM in use: A symposium by reflective practitioners, Systemic Practice and Action Research, 13, 6, pp. 799-823.

Espejo, R. and Harnden, R.J. (eds), 1989, The Viable Systems Model: Interpretations and Applications of Stafford Beer's VSM, John Wiley: Chichester, UK.

Flood, R.L. 1999, Rethinking the Fifth Discipline: Learning Within the Unknowable, Routledge, London.

Flood, R. 2000, A brief review of Peter, B. Check land's contribution to systemic thinking, Systemic Practice and Action Research, 13, 6, pp. 723-732.

Forrester, J. 2003, Dynamic models of economic systems and industrial organizations, System Dynamics Review, 19, 4, pp. 329-345.

Gharajedaghi, J. 1999, Systems Thinking: Managing Chaos and Complexity: A Platform for Designing Business Architecture, Butterworth-Heinemann, Boston.

Hammond, D. 2003. The Science of Synthesis: Exploring the Social Implications of General Systems Theory, University of Press of Colorado, Boulder, Colorado.

iThink, 2004, An Introduction to Systems Thinking, ISEE Systems, www.iseesystems.com

Jackson, M.C. 2000, Systems Approaches to Management, Kluwer/Plenum, New York.

- Jackson, W. 2002, The modern dilemma and the challenge to systems thinkers, *Systems Research and Behavioural Science*, 19,5, pp. 126-138.
- Kim, D.H. 1998, *Systems Archetype Basics: From Story to Structure*, Pegasus Communications, Waltham, MA.
- McGarvey, B. and Hannon, B. 2004, *Dynamic Modelling for Business and Management: An Introduction*, Springer, New York.
- McLucas, A.C. 2005, *System Dynamics Applications: A Modular Approach to Modelling Complex World Behaviour*, Argos Press, Canberra.
- Meadows, D.H. 2008, *Thinking in Systems: A Primer*, Chelsea Green, White River Junction.
- Midgley, G. 2000, *Systemic Intervention: Philosophy, Methodology and Practice*, Kluwer Academic, New York.
- Mingers, J. 2000. An idea ahead of its time: The history and development of soft systems methodology, *Systemic Practice and Action Research*, 13, 6, pp. 733-755.
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- Moxnes, E. 2000, Not only the tragedy of commons: Misperceptions of feedback and policies of sustainable development, *System Dynamics Review*, `16, 4, pp. 325-349.
- Olsen, J.E. and Haslett, T. 2002, *Systemic thinking and learning organization*, Working Paper Series, Faculty of Business and Economics, Monash University.
- Ramage, M. & Shipp, K.2009. *Systems Thinkers*, Springer, Milton-Keyes.
- Senge, P.M. 1990, The leaders' new work: Building learning organizations, *Sloan Management Review*, 32, 1, pp. 7-18.
- Senge, P., Kleiner, A., Roberts, C., Ross, R. and Smith B. 1999, *The Dance of Change: The Challenges of Sustaining Momentum in Learning Organizations*, Nicholas Brealey, London
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- Sterman, J.D. 1989, Modelling managerial behaviour: Misperceptions of feedback, *Management Science*, 35, 3, pp. 312-338.
- Sweeney, L.B. and Meadows, D. 1995, *The Systems Thinking Playbook: Exercises to Stretch and Build Learning and Systems Thinking Capabilities*, University of Hampshire, Durham.
- Williams, T. 2002, *Modelling Complex Projects*, Wiley, New York. Wilson, B. 2001, *Soft Systems Methodology: Conceptual Model Building and its Contribution*, Wiley, Brisbane

Graduate attribute development

The term CAPRI is used for the five Design, Architecture and Building faculty graduate attribute categories where:

- C = communication and groupwork
- A = attitudes and values
- P = practical and professional
- R = research and critique
- I = innovation and creativity.

Course intended learning outcomes (CILOs) are linked to these categories using codes (e.g. C-1, A-3, P-4, etc.).

The REVIEW criteria-based assessment system is adopted in the marking of subjects to give students feedback about their development of these graduate attribute categories over time throughout their course of study. REVIEW also enables students to self-assess to encourage a self-reflective approach to their work.

Support

Students MUST obtain a copy of the Generic Faculty Subject Information Booklet. The booklet is to be read in conjunction with this subject outline. This booklet contains the following information:

Student services

- Student support and other information

Policies related to teaching and learning

- Assignment submission/presentation
- Late and incomplete assignments
- Late penalties
- Grades
- Academic integrity and cheating

Process related to teaching and learning

- Feedback process
- Return of assignments
- Attendance
- Extensions and absence
- Special consideration
- Faculty Academic Liaison Officer
- Student access to teaching spaces
- Pin access and other guides
- Environment, health and safety
- First Aid personnel within the faculty

The Generic Faculty Subject Information Booklet is available in both hard copy and electronic format. Hard copies are placed outside the UTS Student Centre (level 4, DAB Building) for the first two weeks of each semester and teaching period. The electronic version of the booklet is continuously available via UTS Online and the DAB website:

www.dab.uts.edu.au/courses/subjects

Statement about assessment procedures and advice

Students MUST refer to the following information and UTS assessment information, which is published in the Policy and Procedures for the Assessment of Coursework Subjects, available at:

www.gsu.uts.edu.au/policies/assessment-coursework.html

Statement on intellectual property

The University of Technology, Sydney will retain your work to promote the University and/or its courses for an indefinite period. If you would not like the University to use your work in its promotion, please notify the subject coordinator in writing.

Statement on UTS email account

Email from the University to a student will only be sent to the student's UTS email address. Email sent from a student to the University must be sent from the student's UTS email address. University staff will not respond to email from any other email accounts for currently enrolled students.