Construction Sector and Complexity Theory: Systems Theory Update

20 – 22 October 2014

Course Description
Has your organisation been trying to deal with a complex issue for some time and had little success? A solution may be the application of IM (Interactive Management), a method of constructing alternative designs for resolving some complex situations or issues.

The human mind is limited in its ability to comprehend new complex situations. As a result we filter the information available to us and only notice facts that fit our pre-conceived notions about the problem at hand. When more than one person is involved, different interpretations of the situation arise and a conflict of opinions can occur.

The focus of this course is on the challenges facing the South African construction industry. It begins by uncovering what some of these problems are and what has been done so far to resolve them. The course then introduces delegates to the concept of World Hypotheses or Worldviews. These are positions we take that influence how we perceive and think about things. Delegates are then appraised on systems theory and its most recent ideas about complexity. From these theoretical topics the workshop then progresses to utilizing the Interactive Management method to structure one of the problem areas identified earlier in the course. To do this delegates are introduced to Interpretative Structural Modelling software.

Interpretive Structural Modelling (ISM) is an approach that allows a group of people to collectively build a model of a situation so that the relationships between the parts are made explicit. The ISM tool was developed to resolve difficult and complex design problems in engineering systems, and was later improved, known as Interactive Management, and applied with some success to real world ‘soft’ issues. Interactive management provides the framework for a real and deep understanding of the situation. The output of the approach is a situation model/digraph that incorporates the interests and ideas of all members of the participating group. In addition the involvement of individuals in creating the model supports and encourages their commitment to perform any required action arising from the problem analysis. The people involved are exposed to real sharing of ideas and learning.

Notes and trial version software as well as light refreshments are provided.

Objectives
The course objectives are intended to introduce delegates to Systems Theory and recent ideas about Complexity Theory. In addition the use of Interactive Management software will be demonstrated in a workshop setting so that delegates can experience and understand the power of this approach through the demonstration of Interpretive Structural Modelling (ISM) software.

On completion of the course, the participants will:
- Understand the evolution of systems theory and complexity theory.
- Understand how to use a triggering question to elicit problematical elements in the construction context, structure the elements through Interpretive Structural Modelling and generate the root problem displayed in a digraph.
- Understand how to use binary language in the software for communication between audiences.
- Understand how to use Interpretive Structural Modelling as an enabling tool for multidisciplinary working.

Course Lecturers
Dr Nien-Tsu Tuan
Tuan’s industrial career span some 20 years after graduating from the Chung Cheng Institute of Technology in 1986. During this time he had various experiences in defence equipment, practicing as a mechanical engineer, production engineer and project engineer. His practical experience inspired him to do MEng and PhD in Engineering Management. He received his MEng from University of Pretoria and PhD from University of Cape Town. In 2004 Tuan changed his career to academia. His major research interests include systems theory, decision theory and philosophy. His papers have been published on various international journals, including Systems Research and Behavioural Science, Systemic Practice and Action Research and Kybernetes. He also authored a book on multi-criteria decision making based on the Logical Decisions software.
Ian Jay
Ian started his career as a Scientific Officer in the British Geological Survey, and then he moved to the National Coal Board. In 1981 he joined Shell Oil Company and worked in mineral exploration, during this time he studied and graduated from UNISA with an MBL. In 1989 Ian changed career to the marketing and later IT area in Shell and then moved to BP as a consultant. This gave him some 18 years of experience in systems and business change project management in the oil industry. The scope of projects ranges from technology scanning, business case development through to implementation of transaction and MIS systems and IT infrastructure. Since 2008 Ian has been a full time lecturer at UCT and is responsible for the MSc programme in project management. His research interests are varied but all have the common thread of direct relevance to managing projects.

Mark Massyn
Prior to joining the ranks of academia Mark practiced as a Project Manager in the fields of commercial, industrial and low income housing both as a practicing project manager and a consultant in Project Management. Mark is currently a member of the Building Construction Standard Generating Body and the CIDB Stakeholder’s forum. He has also served on the Quantity Surveying Standard Generating Body and both local and national Chartered Institute of Building (Southern Africa) committees. His research areas include the impact of subcontracting on the construction process, application of health and safety within the construction industry and procurement systems applied to low income housing.

Course Information

Who should attend?
This course will be of benefit to managers and owners of construction firms.

Format of course
The course comprises three days of lecture/workshops: 09h00 -16h30 from 20 – 22 October 2014. The course consists of a series of lectures interspersed with interactive group sessions and workshops.

Cost
The fee for the course will be R5000 per person. This fee includes a comprehensive set of course notes, trial version software and refreshments.

Payment information is available on the application form

Certificates
A certificate of attendance will be awarded to all course members who attend a minimum of 80% of the course.

CPD Credit Requirements
The course is registered with the Engineering Council of South Africa, and is accredited for the award of CPD points, which are now required for continuing professional registration. The ECSA course code is UCTCTC14.

Applications and cancellations
Registration forms are available on the website www.cpd.uct.ac.za/applications/
In order to ensure a place on the course applicants must complete and return a signed application form to the course administrators, Heidi Tait or Sandra Jemaar: ebe-cpd@uct.ac.za
Confirmation of acceptance will be sent on receipt of an application form.
Payment is due one week before the start of a course.
Cancellations must be received one week before the start of a course, or the full course fee will be charged.

Date, time and venue
Dates: 20 – 22 October 2014
Time: 09h00 – 16h30
Venue: Lecture theatre LS4G, Leslie Social Science Building, Upper Campus, UCT

Registration
08h45, 20 October 2014
(Only students who have completed an application form and have been accepted for the course will be able to register)