

國家理論科學研究中心學術演講

NCTS Industrial Statistics Research Group Seminar

Date: 1:30pm~5:00pm, Nov. 22 (Fri.), 2013

(1) 1:30pm-3:00pm

Speaker: Prof. Ching-Shui Cheng 鄭清水
(中研院統計所所長)

Topic: Templates for Design Key Construction

Abstract:

Design key is a useful method of constructing factorial designs with what J. A. Nelder called simple block structures, including split-plot designs, split-split plot designs, strip-plot designs, etc. One familiar method of constructing such designs is to use independent treatment factorial effects to divide the treatment combinations into blocks, rows, and columns, etc. Certain conditions need to be verified to ensure that the desired block structure is achieved. The method of design key, proposed by H. D. Patterson, on the other hand, guarantees the desired block structure by choosing some appropriate contrasts of the experimental units to be aliases of the main-effect contrasts of treatment factors. We provide some useful templates for implementing design key construction. Constraints imposed by the block structure and other important information, including independent generators for systematic construction of the design, are built into the templates. The templates also remove red undancies and eliminate the need to check some conditions for design eligibility.

(2) 3:00pm-3:30pm Tea Break

(3) 3:30pm-5:00pm

Speaker: Prof. Chien-Wei Wu 吳建瑋
(國立清華大學工業工程與工程管理學系)

**Topic: Introduction to the Development and Applications
of Process Capability Analysis**

Abstract:

With the rapid advancement of the manufacturing technology, suppliers began to require their products be of a high quality involving very low fraction of nonconformities. The fraction of nonconformities is usually less than 0.01%, and often measured in parts per million (ppm). The traditional methods of figuring out the fraction nonconforming are no longer applicable since any sample of a “reasonable size” may very likely contain no defective product items. Hence an alternative method of measuring the fraction of nonconforming is to use the capability indices. Proper understanding and their accurate estimation are essential for a modern company to maintain the status of a capable supplier. Most supplier certification manuals include a discussion of process capability analysis and describe the recommended procedure for computing capability indices. Analyzing these capability indices, the production department is able to trace and improve inadequate processes in order to meet customers' needs. In this talk, I will firstly give an overview of theory and practice on process capability indices for quality assurance. Then, several extensions and applications to real world problem are discussed. Finally, several recent developments and applications will also be introduced and discussed.

Place:

***Lecture Room A of National Center for Theoretical Sciences (NCTS),
4th Floor, The 3rd General Building, National Tsing Hua University***

國家理論科學研究中心
102 年 11 月 8 日