In today’s competitive business and industrial environment, it is becoming more crucial than ever to assess precisely process losses due to non-compliance to customer specifications. To assess these losses, industry is extensively using Process Capability Indices (PCIs) for performance evaluation of their processes. Determination of the performance capability of a stable process using the standard process capability indices such as $C_p$ and $C_{pk}$ requires that the underlying quality characteristics data follow a normal distribution. However it is an undisputed fact that real processes very often produce non-normal quality characteristics data and also these quality characteristics are very often correlated with each other. For such non-normal and correlated multivariate quality characteristics, application of standard capability measures using conventional methods can lead to erroneous results.

The research undertaken in my PhD thesis presents capability assessment methods to estimate more precisely and accurately process performances based on univariate as well as multivariate quality characteristics. Proposed capability assessment methods also take into account the correlation, variance and covariance as well as non-normality issues of the quality characteristics data. It is an established fact that the fundamental objective of all capability measures is to help process engineers and managers decide whether to accept or reject the process outcomes based on conformance to customer (engineering) specifications. This research has therefore focused on presenting the efficacy of our proposed methods using the Proportion of Non-Conformance (PNC) criterion, which is frequently used in practice to assess the utility of PCI methods.

**Date:** 17 July, Friday  
**Time:** 3:30 pm – 4:30 pm  
**Venue:** Access Grid Room, 8.9.64-66