

# GRADUATE SEMINAR

Qi Lyu

## Modified Economic Statistical Design of Hotelling's $T^2$ Control Chart with Variable Sampling Interval

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**2:30 pm**

**University of Regina**

Zoom Meeting ID: 941 2536 7372

### **Abstract:**

In quality control field, the  $\bar{X}$  control chart is commonly used to monitor the mean of single quality characteristic. When multiple correlated quality characteristics of a product need to be measured and controlled jointly, it can be extended to the Hotelling's  $T^2$  control chart.

Comparing with the traditional sampling strategy, VSI (Variable Sampling Interval) has such characteristic that the sampling interval between successive samples is a function of prior sample result. This scheme is connected with Hotelling's  $T^2$  control chart and the chosen method of sampling interval is proposed. According to this procedure, ATC (Average Time of the Cycle) is calculated by using Markov chain approach.

Based on the economic statistical design which was proposed by Costa and Rahim in 2001, we apply the Taguchi's loss function to the cost function and try to optimize this nonlinear constrained problem.

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