QUALITY CONTROL AND IMPROVEMENT WITH MINITAB

PROF. INDRAJIT MUKHERJEE
Department Management
IIT Bombay

TYPE OF COURSE : New | Elective | PG
COURSE DURATION : 8 Weeks (15 Feb’ 21 - 09 Apr’ 21)
EXAM DATE : 25 Apr 2021

PRE-REQUISITES : Basic Course on Statistics and Quality Management (Web or Video)
INTENDED AUDIENCE : Operations Management, Mechanical Engineering, Production Engineering, Metallurgical Engineering, Industrial Engineering, Chemical Engineering, Chemistry, Pharmaceutical Sciences
INDUSTRIES APPLICABLE TO : Tata Motors Limited; Mahindra & Mahindra Limited; Maruti Suzuki Limited; Tata Steel Limited; Sundaram Clayton Limited; Ceat Limited; Glenmark Pharmaceuticals Limited; GE Global Research; General Motors Limited; Ford Motors Limited, Cummins Limited

COURSE OUTLINE :
This course will provide a holistic view (with simultaneous emphasis on theory and illustrations/examples/cases) on various topics of Quality Control and Improvement using MINITAB software interface. The course will also discuss multiple regression modelling (e.g. model development and model adequacy) approach with examples before elaborating applications of design of experiment techniques.

ABOUT INSTRUCTOR :
Dr. Mukherjee is currently working as Professor in the Shailesh J. Mehta School of Management, IIT Bombay. Before joining IIT Bombay, he was Lecturer in the School of Management Science, Bengal Engineering and Science University (BESU), West Bengal (India), and in Mechanical Engineering Group, Birla Institute of Technology and Science (BITS), Pilani, Rajasthan (India). He also worked for Tata Motors Limited, as Senior Engineer, in the Central Quality Division, Pune Plant.

COURSE PLAN :
Week 1: Introduction to Quality Control and Improvement, Quality Control Tools with Examples in MINITAB
Week 2: Statistical Process Control Techniques with Examples in MINITAB, Process Capability, and Sigma Level with Examples in MINITAB
Week 3: Hypothesis Testing and ANOVA Analysis in MINITAB, Measurement System Analysis (MSA) using MINITAB
Week 4: Multiple Regression for Process Modelling using MINITAB
Week 5: Introduction to Design and Analysis of Experiments for Quality Improvement with MINITAB
Week 6: Factorial Design (2k) with Examples in MINITAB
Week 7: Response Surface Methodology (RSM) and CCD Design with Examples in MINITAB, Multiple Response Optimization using MINITAB
Week 8: Fractional Factorial Design with Examples in MINITAB, Taguchis Experimental Design and Analysis using MINITAB