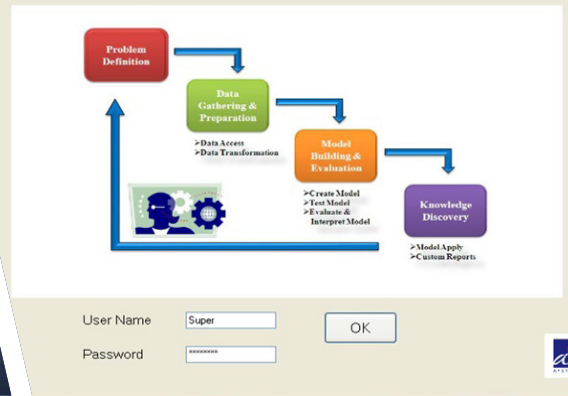




SIMTech Prognostic Monitoring System (SIMProg)



PE WSQ Programme in Implement Manufacturing Data Mining Techniques (42 hours)

Data mining techniques are increasingly important for data-intensive manufacturing operations as the industry faces a number of challenges such as equipment and material condition variations, trial-and-error in process parameter setting, product quality inconsistencies, low capability of root cause discovery, process performance prediction and process parameters/recipe auto tuning. By applying data mining techniques, a company can improve its product quality and manufacturing productivity.

This WSQ course aims to provide a good understanding of the fundamentals of data analytics and data mining techniques for different manufacturing applications. Participants will learn techniques for advanced clustering methods for product quality management, correlation modelling and data pattern methods for root cause analyses and neural networks for process performance prediction.

Why This Course

- Designed to specially cater to local industry demand
- Highly practical and intensive
- Latest knowledge and up-to-date technology
- Case studies highlighting industrial applications
- Expert trainers in the field with industrial experience

Who Should Attend

This course is designed for operation directors and managers, production/process engineers, R&D engineers and IT support staff working on processes, production and quality improvement in manufacturing industries such as precision engineering, aerospace, automotive electronics, semiconductor, oil and gas, pharmaceutical and medtech.

When & Where

Please visit our website at KTO.SIMTech.a-star.edu.sg for the updated course schedule.

Training Venue:

Singapore Institute of Manufacturing Technology
2 Fusionopolis Way, Innovis, Level 8, Singapore 138634

What You Will Learn

Fundamentals of Data Mining

- Introduction to data mining concept and applications in manufacturing
- Process correlation modelling and data pattern analyses through statistical methods
- Advanced data clustering technologies for anomaly detection and classification
- Process performance prediction using artificial intelligence (neural networks, etc)

Case Studies by Grouping Projects Using Real Production Data

- Data preparation
 - Problem statement
 - Technical challenges
 - Project objectives
 - Data collection and pre-processing
- Data analysis
 - Major factor identification by correlation coefficient analysis
 - Correlation modeling by multiple regression method and root cause analysis
 - K-means clustering and pattern based regression modeling
 - Correlation modeling by fuzzy neural networks method for quality estimation
 - What-if predictive analysis for process improvement & DOE design
 - Project conclusion
- Improvement plan
 - Identifying yield improvement areas
 - Production/process improvement plan

About the Course Leaders



Dr Li Xiang is a Senior Scientist and Team Lead in SIMTech. She has more than 20 years of experience in research on computational intelligence, data mining, and statistical analyses such as neural networks, fuzzy logic systems, unsupervised data clustering, and regression modelling. Her research expertise includes data mining and knowledge discovery, decision support systems, in-situ process monitoring and quality control. She is a member of the IEEE.



Dr Zhou Jun Hong is a Principal Research Engineer at SIMTech and also the OEE initiative lead in the MPTC center. She received her PhD in mechanical and aerospace from the Nanyang Technological University. She has over 15 years of research and industrial experience in factory automation, operation excellence, artificial intelligence, equipment condition monitoring and intelligent condition-based maintenance.

Course Fee and Funding

- The full course fee for this module is S\$3,000 before course fee funding & GST.
- All Singaporeans and Permanent Residents aged 21 years and above can enjoy course fee funding of up to **70%** of the course fee.
- Singaporean or Permanent Resident employees fully sponsored by SMEs can enjoy course fee funding support of up to **90%** of the course fee under the **Enhanced Training Support for Small & Medium Enterprises (SMEs)** scheme, subject to eligibility criteria.
- Singaporeans aged 40 years and above can enjoy course fee funding of up to **90%** of the course fee under the **SkillsFuture Mid-career Enhanced Subsidy (MCES)**.
- Singaporeans aged 35 years and above with earnings not more than S\$2,000 per month can enjoy course fee funding for **95%** of the course fee under the **Workfare Training Support (WTS)** scheme.
- Singaporeans aged 25 years old and above are eligible for **SkillsFuture Credit** which can be used to offset course fees.

For more information about the course fee funding, please visit www.ssg.gov.sg