

Certificate

certification number: 229.8651-108023

We hereby certify that

Munich, March 2022

Marwan Jalaeddine

has successfully completed the certification requirements for the

TUM Lean Six Sigma Yellow Belt

through the completion of the program Six Sigma and Lean: Quantitative Tools for Quality and Productivity

The program was developed in close collaboration with program partners as a 22-week Professional Series of courses on the edX platform.

The following subjects were covered in 30 hours of lectures, weekly quizzes, online case studies and projects:

Lean

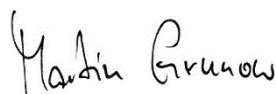
- ▶ History of Lean
- ▶ Continuous Improvement (Kaizen)
- ▶ 8D Problem Solving
- ▶ Value Stream Mapping
- ▶ Fishbone, 5 Whys, Cause & Effect
- ▶ 3Ms: Mura, Muri, Muda
- ▶ 7 Wastes of Lean
- ▶ Poka Yoke Solutions
- ▶ Visual Management
- ▶ Workplace Organization - 5S
- ▶ Capacity Analysis, Little's Law
- ▶ Queuing Theory
- ▶ Setups and Batches
- ▶ Mixed Model production
- ▶ JIT/Pull Systems
- ▶ Scheduling Pull Systems
- ▶ Kanban
- ▶ Total Productive Maintenance
- ▶ Single Minute Exchange of Die
- ▶ Overall Equipment Effectiveness

Six Sigma

- ▶ Project Identification and Definition
- ▶ SIPOC
- ▶ Customer Expectations, VOC, Kano
- ▶ Critical-to-Quality Parameters
- ▶ Process Mapping/ Flow Diagram
- ▶ MSA, Gage R&R
- ▶ Probability Distributions
- ▶ Sampling plans
- ▶ Descriptive Statistics
- ▶ Plots (Pareto, Scatter, Time Series)
- ▶ Process Capability: Yield, ppm, DPMO, Sigma Level
- ▶ Inductive Statistics: Confidence Intervals, Hypothesis Testing
- ▶ Linear Regression/ ANOVA
- ▶ Design of Experiment
- ▶ Failure Mode and Effect Analysis
- ▶ SPC, Control Charts
- ▶ Control and Response Plan
- ▶ Design for Six Sigma
- ▶ Tolerance Design



Prof. Dr. Christoph Kaserer
Academic Director Customized
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Prof. Dr. Martin Grunow
Chair, Production and Supply
Chain Management
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Prof. Dr. Holly Ott
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