Continuous improvement of manufacturing systems

Summary
This course will arm students with practical skills and hands-on tools for planning and guiding systematic change and transformation in a consistent manner and provide a framework for evaluating and improving manufacturing/service systems.

Content
Concepts and methods are examined via projects and case studies on forecasting, production planning, quality, supply planning, inventory management, logistics, and customer service.

**Module I - Introduction:** Importance of Continuous Improvement, Drivers and enablers, where to use it, tools, and implementation, why change project fails, required change skills

**Module II – Diagnostic models:** Evaluating systems, defining desired output(s), developing an analytical framework

**Module III – Pilot test design and check:** Designing small and controlled experimental improvement on systems, developing a pilot test, defining key performance indicators, gathering results and evaluating, gap analysis

**Module IV – Implementation:** Execution techniques, effective implementation of the project, task development, action plan

**Module V – Evaluation:** Performance measurement, Managing deviations, Continuous improvement

**Module VI – Digital Transformation:** Digitization, industry 4.0, Data driven industries, Artificial intelligence, Digital manufacturing, Human-machine interaction, Cybersecurity, Internet of Things

Keywords
Continuous improvement, Manufacturing systems, Digital Transformation, Digital Manufacturing

Learning Prerequisites

**Recommended courses**
Production Management (Fall semester)

**Important concepts to start the course**
Good knowledge of computer
Active participation for cases and problem sets
Willingness to make change and transformation

Learning Outcomes
By the end of the course, the student must be able to:

- Understand fundamentals of change and transformation
• Evaluate and analyze a system based on key performance indicators
• Design and execute a change and transformation plan for a system

Teaching methods
- Project based learning
- Case studies
- Videos
- Research papers
The course is based on the implementation of theoretical concepts and models to practical cases. Students work in a group on multiple cases during the whole semester.

Expected student activities
- Self study
- Q&A in the classroom
- Group activities
- Brain storming
- Teamwork
- Class discussions

Assessment methods
Continuous evaluation of case reports, presentation, class discussions, during the semester. Final exam based on the presentation of the application case and on the understanding of the concepts.

Supervision
Office hours  Yes
Forum  Yes
Others  Tuesdays 13:00-14:00 or by appointment

Resources
Bibliography

Ressources en bibliothèque
• Leading Change / Kotter

Notes/Handbook
Course slides (main material)
Harvard Case studies