

ME-498

**Continuous improvement of manufacturing systems**

Kaboli Amin

Cursus	Sem.	Type
Managmt, tech et entr.	MA2, MA4	Opt.
Mechanical engineering	MA2, MA4	Opt.
Robotics	MA2	Opt.

Language of teaching	English
Credits	4
Withdrawal	Unauthorized
Session	Summer
Semester	Spring
Exam	During the semester
Workload	120h
Weeks	14
Hours	<b>4 weekly</b>
Courses	2 weekly
Project	2 weekly
Number of positions	<b>50</b>

**It is not allowed to withdraw from this subject after the registration deadline.**

**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

John Kotter, Leading Change, Harvard Review Press, 2012

#### Ressources en bibliothèque

- [Leading Change / Kotter](#)

#### Notes/Handbook

Course slides (main material)  
Harvard Case studies