OPM 561 Production Management: Lean Approaches and Variability

To match supply/capacity with demand, managers and planners have to consider different types of variability. This course discusses sources for three dimensions of variability and analyzes the effects on several operational performance measures. It introduces planning tasks for the design and management of operations systems from the strategic to the operational level. After providing an overview of variability in operations management, the course addresses capacity planning and design problems for flow production systems. Afterwards, the course covers lean and total quality management and introduces different scheduling applications. Challenges and opportunities arising from the fourth industrial revolution (Industry 4.0) and key concepts for future factories are presented. To manage and reduce variability, we introduce modern business analytics tools as well as classical lean management approaches.

This course aims to provide insights into the key decisions regarding the design and management of lean production systems. For this purpose, quantitative models for the performance analysis and optimization are discussed. Selected problems are implemented and solved using standard software for business analytics.

General Information

Lecturer	Prof. Dr. Raik Stolletz
Course Format	One lecture and exercise each week
Credit Points	6 ECTS
Language	English
Grading	Exam
Term	Fall Semester
Range of Application	M.Sc. MMM, M.Sc. Bus. Edu., M.Sc. Bus. Inf., M.Sc. Bus. Math., M.Sc. Econ.

Learning Goals

- Develop skills for quantitative planning in the field of production management.
- Have an overview of requirements, objectives and key concepts in lean production management.
- Understand reasons and effects of variability in operations management.

Prerequisites:

- Basic knowledge in operations management (e.g. BSc course “Produktion”, or “OPM 301 Operations Management” or equivalent)

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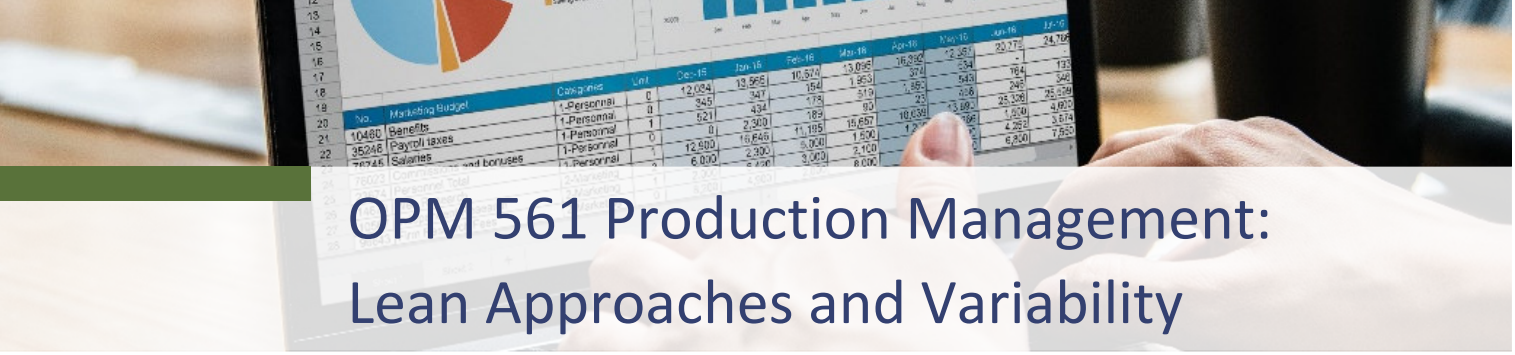

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Detailed Agenda

I Introduction

- Variability in Operations Management

II Capacity planning in Operations Management

- Introduction to stochastic variability
- Design of flow production & transfer lines

III Lean Management

- Principles of lean management and implementation of lean systems
- Total Quality Management

IV Scheduling Applications

- Job shop scheduling
- Lot sizing

V Industry 4.0

Literature

- Hopp, W. and M. Spearman (2008). Factory Physics. McGraw-Hill/Irwin series operations and decision science. Mcgraw-Hill Publ.Comp.
- Pinedo, M. (2005). Planning and scheduling in manufacturing and services. Springer (New York).
- Journal papers will be announced during the lecture

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