

SE2500

Modeling and analysis of Supply Chain

Professor: Evren Sahin, Jakob Puchinger

Language of instruction: English – **Number of hours:** 36 – **ECTS:** 3

Prerequisites: MA1200 and MA1300 or equivalent.

Period: S8 Elective 08 February to March IN28IE1, SEP8IE1

Course Objectives

This course follows two major objectives. First, broad knowledge of various aspects of supply chain management are presented, allowing students to understand the strategic importance of this topic for the performance of companies. Second, various optimisation problems occurring along the supply chain will be analysed in detail.

Models and optimisation methods will be studied, allowing students to acquire the necessary skills to solve such problems. Every lecture unit will introduce major concepts and will be followed by case studies and/or practical exercises.

On completion of the course, students should be able to

- ✧ understand the challenges of managing efficiently the production and distribution processes
- ✧ use preliminary Operations Research based approaches, methods and tools to manage supply chains

Course Contents

- ✧ Introduction to supply chain management
- ✧ Demand and Supply Planning
- ✧ Supply Chain Design
- ✧ Inventory control
- ✧ Vehicle Routing Problems
- ✧ Urban Mobility
- ✧ MIP modelling and optimization
- ✧ Heuristic Optimization Methods

Teaching Material and Textbooks

Slides, Exercises

S. Chopra and P. Meindl, Supply Chain Management: Strategy, Planning, and Operation, Global Edition, 6/E, Pearson, 2016.

D. Simchi-Levi, X. Chen, J. Bramel, The Logic of Logistics: Theory, Algorithms, and Applications for Logistics Management, Third Edition, Springer, 2014.

D. Simchi-Levi, P. Kaminsky, E. Simchi-Levi, Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies, Third Edition, McGraw-Hill, 2008.

Evaluation

30% Case Studies

30% Programming Exercises

40% Written Exam