

## t.OMCS - Operations Management Case Study

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<b>Person responsible for the course:</b>	Andreas Klinkert, klnk
<b>Credits:</b>	3
<b>Valid for:</b>	2011/2012
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### Learning objectives:

The students

- are able to systematically describe and analyze a complex problem from the practice of Operations Management
  - know how to conceptually design an appropriate software solution and formulate the program requirements
  - are capable to implement a sophisticated software solution in the programming language Java
  - are acquainted with the principles of object-oriented software design and their application in programming
  - have gained insight into some "best practice" aspects of software development, in particular in the domain of Operations Management
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### Course content:

The case study considered stems from the operational area of Operations Management. The aim is to develop a software solution for this problem and to implement it in the programming language Java. In doing this, the present Java skills shall be extended and fruitfully put into use in a real-world project. Furthermore, it shall be demonstrated how the use of an object-oriented language like Java may provide significant benefits in larger software projects, during software development as well as in subsequent adaptation and maintenance phases.

The case study refers to the short-term planning and scheduling in a job shop. Shop floor scheduling is the last planning phase of the MRP-II production planning and control framework. It involves the detailed timing of the individual operations of the jobs on the different working stations. A broad variety of optimization models and algorithms has been developed in Operations Research and Operations Management for solving the various scheduling problems on the shop floor level.

In a first project phase, the problem will be analyzed and a detailed problem description will be elaborated. Afterwards a heuristic optimization algorithm for solving the problem will be developed, and the conceptual design of the software tool will be devised. The course's main focus is on the second project phase which involves the implementation of the solution method. Software components will be developed for reading the input data, constructing the model, implementing the optimization algorithm, displaying the solution, creating the graphical user interface and testing numerical examples. The implementation in Java uses the Eclipse development environment and is based on the principles of object-oriented programming.

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### Previous knowledge:

Basics of programming in Java

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**Teaching method:**

Type of lesson:	Number of lessons per week:
Lecture	14 x 2L
Tutorial/Practicum	14 x 2L
Group teaching	
Block instruction	
Seminar	

**Assessment:**

According to the table or as specified in writing by the lecture at the beginning of the semester!

Number	Type	Weighting
1	End of term exam	100%
	Exam during the semester	
	Further assessments	

**Language of instruction:**

German

**Instruction material:**

Recommended literature:

- Horstmann, C.S., Cornell, G., Core Java, Vol. 1, 8th Edition, Prentice Hall, 2007

**Comments:**

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