

SUBJECT PROGRAM – WAREHOUSE SIMULATION, MATERIAL HANDLING TECHNOLOGIES AND HANDLING EQUIPMENT

The code of the subject:
The name of the subject:	Material Handling Technologies and Handling Equipment
Lecturer	Position, degree
Credit Points:	6 ETCS
Evaluation method:	Graded evaluation

The general purpose of the subject

The general purpose of the subject is to provide theoretical knowhow, practical exercises and simulations about warehouse layout, managing warehouses and warehouse equipment. After passing the subject each Students know how to set up different types of warehouses, knows how to run them and how to evaluate the performance and activities.

Warehouse simulation software Class allows users to design, test and redesign complex warehousing solutions in a virtual computer environment by changing many different parameters and measuring their impact. It is a great opportunity for the Students to test their ideas of warehouse layout design and operational management.

Learning Outcomes:

- 1) Student knows different racking and shelving systems.
- 2) Student knows the usage of different racking types, their advantages and disadvantages.
- 3) Student knows the working principals of automated warehouse systems.
- 4) Student knows different material handling equipment types, their usage, advantages and disadvantages
- 5) Student knows how to set up warehouse procedures and operations.
- 6) Student is capable to evaluate warehouse performance and to create KPI-s
- 7) Student is capable to design warehouse layout
- 8) Student knows how to plan warehouse resources (staff, equipment, materials)
- 9) Student can explain warehouse IT infrastructure principles
- 10) Student can formulate warehouse management principles.

The study format and the content

The study is scheduled for one semester from September-December or from February - May, which covers the study of theoretical aspects of material handling technologies and handling equipment, plus practical case-studies at simulation software Class.

Classes are scheduled for 4 academic hours each week. The course is structured according to problem-based learning, which involves using the variety of active learning methods.

Storyboard

Learning week (LW)	Activities
LW 1-2	The warehouse racking and shelving systems.
LW 3-4	Automated warehouse systems.
LW 5-6	Material handling equipment types.
LW 7-8	Automated material handling equipment.
LW 9-10	Case-study at Class
LW 11-12	Warehouse management and IT
LW 13-14	Case-study at Class
LW 15-16	Teamwork presentations, exam.

Evaluation criteria/assessment

In the end of the semester Students have to make and present teamwork. Teamwork's purpose is to see how well can they implement the theoretical knowledge into practice. Teamwork gives 50% of the total evaluation. Second part of the evaluation is an exam, which will be in test form.

Grades:

Grade A/5/ (Excellent): points 90-100

Grade D/2/ (Average): points: 60-69

Grade B/4/ (Very Good): points 80-89

Grade E/1/ (Accepted): points 50-59

Grade C/3/ (Good): points 70-79

Grade F/0/ (Failure): less than 50 points

Learning Materials

- 1) Class Training: Hints & Tips
- 2) <https://cirruslogistics.com/products/class/>
- 3) Practical Handbook of Warehousing, Ackerman
- 4) <https://www.mecalux.com/>
- 5) The handbook of Logistics and Distribution Management, Barker/Rushton/Croucher