Module Description

Factory Planning

General Information

Number of ECTS Credits

3

Abbreviation

FTP_FactPlan

Version

2016.03.17

Responsible of module

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Language

	Lausanne	Bern	Zürich	Lugano/Manno
Instruction	☐ E ☐ F	☐ D ☐ E ☐ F	☐ D ☐ E	☒ E
Documentation	☐ E ☐ F	☐ D ☐ E ☐ F	☐ D ☐ E	☒ E
Examination	☐ E ☐ F	☐ D ☐ E ☐ F	☐ D ☐ E	☒ E

Module category

☒ Fundamental theoretical principles

☐ Technical/scientific specialization module

☐ Context module

Lessons

☒ 2 lecture periods and 1 tutorial period per week

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Brief course description of module objectives and content

The course will describe Production Systems Configuration and Management as well as the drivers influencing the choice of a given layout and the rules adopted for managing it. Various typical layouts will be described also highlighting their benefits and pitfalls, while eliciting the characteristics of the manufacturing environments justifying their choice. Well known Production Planning & Control (PPC) methods will be presented and applied. Basis on market demand forecasting will be provided.

Aims, content, methods

Learning objectives and acquired competencies

Being able to understand:
- The basics of product layouts and process layouts
- Push production systems
- Inventory management methods
- Simple forecasting methods

Being able to:
- Solve simple line-balancing problems
- Dimension simple cellular layout
- Select the suitable PPC method and dimension it
- Create forecast and evaluate their quality

Contents of module with emphasis on teaching content

Introduction to Factory Planning
- Production models and production systems
- The influence of product structure and Customer delivery lead time
- Classification: MTS, ATO, MTO, ETO
- Levers of action for production system configuration
- Product-Process matrix
- Performance Indexes (KPI)
- Job Shop
- Production Line Balancing
- Group technology and manufacturing cells

PUSH Production Planning and Control
- Sales and Operations Planning (S&OP)
- Master Production Schedule (MPS)
- Material Requirement Planning (MRP)
- Capacity Planning (Rough Cut Capacity Planning; Capacity Requirement Planning)
- Dispatching rule

Inventory Management and Forecasting
- Inventory Management costs and Economic Order Quantity (EOQ)
- Power-of-Two method, EOQ Price discount, Production Economic Order Quantity
- Inventory Management Methods; Replenishment, Periodic Order Quantity (POQ)
- Safety Stock
- Forecasting methods (time series analysis)

Teaching and learning methods
Frontal theoretical lessons integrated with interactive exercises

Prerequisites, previous knowledge, entrance competencies
n/a

Literature
The material distributed by the lecturer is enough, reference books can be suggested if the students want to deepen the knowledge of specific subjects, for instance:

Factory Physics, Wallace J. Hopp and Mark L. Spearman, Waveland Pr Inc; 3 edition (August 31, 2011)

Manufacturing Planning and Control for Supply Chain Management, F. Robert Jacobs, William Berry, D. Clay Whybark, Thomas Vollmann, McGraw-Hill Professional; 1 edition (March 29, 2011)

Forecasting: Methods and Applications, Spyros G. Makridakis, Steven C. Wheelwright, Rob J Hyndman, Wiley; 3 edition (December 1997)

Assessment
Certification requirements for final examinations (conditions for attestation)

Written module examination

Duration of exam :	120 minutes
Permissible aids:	A4 recto/verso with hand written formulas, no numeric example allowed