PROD2101 Production and Operations Management

[65h] 7.5 credits

Teacher(s): Per Joakim Agrell, Philippe Chevalier, Pierre Semal
Language: French
Level: Second cycle

Aims

(1) knowledge of the fundamental problems and questions that production managers must answer,
(2) knowledge of the frequently used concepts for the resolution of these problems in order to gain a competitive advantage through the management of operations,
(3) ability to use the tools and methods of management science to model and tackle those problems

Main themes

This cours provides a general introduction to the management of operations and production, one of the primary functions in the management of companies.
A process oriented vision is emphasized in order to capture and analyse the fundamental dimensions of the management of operations, such as the management of capacities, management of cycle lengths, logistics management and quality management. These processes are conceived as the basic building blocks that all organizations use to produce and distribute products and services that can meet customer expectations.
This modeling oriented approach towards the analysis of the operations management is further reinforced by a systematic study of the main quantitative methods used to support operations management.
This course serves as an introduction to the specialized course in " Logisitics and Supply Chain Management "

Content and teaching methods

A Operations Management
A1 Description, analysis and strategic management of production processes.
Products, processes and performance
Stratégy, product-process matrix
A2 Measures of production flows
Performance measures : throughput, cycle time, inventory
Modelling of processes and analysis of cycle times
Modelling of throughput and analysis the capacities
Modelling and management of inventories
A3 Management of uncertainty and variability in the production flows
Service level and safety stocks
Service time and safety capacity
Process control and process capability
A4 Integration
Flow improvement for a single site : design, flexibility, variability
Flow improvement in the supply chain : synchronization
Continuous improvement process
B Quantitative tools
B1 Linear programming
Modeling and optimization : case studies
Duality and sensitivity analysis
B2 Programmation en nombres entiers
Branch and Bound algorithm
Complexity and heuristics
B3 Inventory management
Deterministic and stochastic models
B4 Introduction to queueing theory
Teaching method
This class is taught during one semester, with a weekly schedule of two hours of lectures, two hours of group work, one hour of recitations and five hours of individual work.
The lectures present the structure and a summary of the materials, the students are supposed to read the materials in advance.
The group work is devoted to the discussion and resolution of managment cases, the recitation are devoted to the resolution of exercices to apply the methods seen in the course.
Personal work consists in preparing the lectures and solving the cases. The cases are to be handed in on a regular basis and are discussed.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Evaluation
The evaluation is based on the work during the semester and a final exam at the end of the semester.

Other credits in programs

IAG21M	Première année de Maîtrise en sciences de gestion (orientation "méthodes quantitatives de gestion")	(7.5 credits)	Mandatory
IAG21M/PM	Première année de maîtrise en sciences de gestion (Création d'entreprise)	(7.5 credits)	Mandatory
INGE12BA	Deuxième année de bachelier en ingénieur de gestion	(6 credits)	
INGE21	Première Ingénieur de Gestion	(7.5 credits)	Mandatory
INGE21/PM	Première Ingénieur de Gestion (Création d'entreprise)	(7.5 credits)	Mandatory