Production management

Kaboli Amin

Cursus

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<th>Cursus</th>
<th>Sem.</th>
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<tr>
<td>Energie et durabilité</td>
<td>MA1, MA3</td>
<td>Opt.</td>
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<td>Génie mécanique</td>
<td>MA1, MA3</td>
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<td>Managmt, tech et entr.</td>
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Summary

Production management deals with producing goods/services at the right time, quantity, and quality with the minimum cost. This course will arm students with hands-on tools for demand management, supply management, and digital transformation in manufacturing companies.

Content

This course is based on the four main modules:

**Module 1) Introduction to Production Management**
Production management vs Supply chain management, Value chain and value adding networks, flows (material flow, information flow, and financial flow), Product development (stage gate concept), Production processes and layouts, Manufacturing cost structure, Breakeven point.

**Module 2) Demand Management**
Bullwhip effect, Forecasting methods, Qualitative methods, Quantitative methods (Causal model, Time series), Demand plan.

**Module 3) Supply Management**
Production Planning: Aggregate plan strategies (level, chase, hybrid), Master Plan Schedule, Material Requirement Planning,
Capacity Planning: Rough Cut Capacity, Capacity Planning using Overall Planning Factors, Supply Plan,
Inventory Management: Economic Order Quantity, Economic Production Quantity, Periodic Review Model, Discount Model.

**Module 4) Digital Transformation of Manufacturing**
Current state of technology in Production Management
Big data and data-driven demand and supply management
Digital strategies and application of digital technology in Production Management.

Keywords

Production Management, Manufacturing Companies, Demand Management, Supply Management, Production Planning, Inventory management, Digital Transformation.

Learning Prerequisites

Required courses

Probability and Statistics

Important concepts to start the course

- Understanding probability and statistics
• Data analysis using Excel

Learning Outcomes
By the end of the course, the student must be able to:
• Choose production tools and methods based on performance and cost requirements and needs, taking into consideration applicability limits and associated hypotheses, CP8
• Model, analyse and optimize the internal logistics of a production and distribution system and the dynamic behaviour of a network of companies, CP9
• Design a system based on engineering specifications utilizing suitable numerical and analytical tools for optimizing the design parameters, CP10

Transversal skills
• Assess progress against the plan, and adapt the plan as appropriate.
• Plan and carry out activities in a way which makes optimal use of available time and other resources.
• Use a work methodology appropriate to the task.
• Communicate effectively, being understood, including across different languages and cultures.
• Keep appropriate documentation for group meetings.
• Manage priorities.
• Take feedback (critique) and respond in an appropriate manner.
• Write a scientific or technical report.

Teaching methods
Students work in a group on a single case over the semester and implement theoretical concepts and models to their cases.

• Formal lectures
• Assignments and project-based learning
• Case studies
• Videos
• Articles and research papers
• Guest speakers

Expected student activities
• Individual: Self-study, Active class discussions, case evaluations, Q&A
• In-group: Teamwork (respect, brainstorming, involvement and constructive feedback)

Assessment methods
Continuous evaluation of case reports, projects, individual and group presentations, class discussions, during the semester. More precisely:
• 25% presence, participation, and class engagement,
• 45% class assignments, presentations, projects, and case reports,
• 30% final exam (final report and presentation and understanding of the case)
Supervision
Office hours Yes
Assistants Yes
Forum Yes
Others - Meetings by appointment.
- All information sharing and communication regarding the course must be through Moodle.

Resources
Bibliography

Ressources en bibliothèque
- Operations Management / Slack
- Manufacturing Planning and Control for Supply Chain Management / Vollman
- Manufacturing operations management / Yoo

Notes/Handbook
Course slides (main material)
Videos
Hand-outs during the semester

Moodle Link