ME-419

Production management

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Cursus	Sem.	Type
Energy Management and Sustainability	MA1, MA3	Opt.
Managmt, tech et entr.	MA1, MA3	Opt.
Mechanical engineering	MA1, MA3	Opt.
Mineur STAS Chine	H	Opt.

Language of teaching	English
Credits	5
Session	Winter
Semester	Fall
Exam	Written
Workload	150h
Weeks	14
Hours	**4 weekly**
Courses	2 weekly
Project	2 weekly
Number of positions	

Summary

This course aims at learnin dynamic behaviour in manufacturing companies while dealing with performances of material and information flows, from demand to supply. Main concepts, methods & tools for demand management, production planning & control and inventory management are main subject areas.

Content

- Basic concepts: manufacturing enterprise as a system; material, information and financial flows; cost structure; various types of production organization.
- Demand management: goals, methods, constraints; types of forecasts; mathematical forecasting methods.
- Production planning and control: levels of planning; production plan, the MRP method, master production scheduling.
- Inventory management: replenishment methods; statistical determination of the management parameters; optimization and performance criteria.
- Just in time (JIT): objectives, basic principles; KANBAN method, dimensioning of KANBAN systems; functioning conditions and limitations of JIT methods.

Keywords

Forecasting, production management, manufacturing operations management, inventory management, Just-In-Time (JIT)

Learning Prerequisites

Important concepts to start the course

- Basis understanding of statistics (basic courses in probability et statistics)
- Data analysis using Excel

Learning Outcomes

By the end of the course, the student must be able to:

- Choose Choose production tools and methods based on performance and cost requirements
- Analyze Model, analyse and optimise the internal logistics of a production and distribution system
- Design Design a system based on the specifications using or applying suitable tools and methods

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

Project-based learning.
Course based on the implementation of theoretical models and concepts to application cases. Students work in group (same group during the semester) on a single application case during the whole semester. 30% presentation of concepts and models, 70% implementation to application case.

Expected student activities

In group: Strong team work. Brainstorming.
Individual: Reading materials and understanding. Q&A in the classroom.

Assessment methods

Continuous evaluation of reports and presentations during the semester. Final exam based on the presentation of the application case and on the understanding of the concepts.

Supervision

Office hours	Yes
Assistants	Yes
Others	All information and communication regarding the course through Moodle

Resources

Bibliography

Manufacturing Planning and Control for Supply Chain Management (by Vollmann, Berry, Whybark, Jacobs, McGraw-Hill). Available at the EPFL library.

Ressources en bibliothèque

- Manufacturing Planning and Control for Supply Chain Management / Jacobs

Notes/Handbook

Forthcoming book - Manufacturing Operations Management: A complete course (by Min-Jung Yoo and Rémy Glardon, World Scientific - UK, will be published in 2018)

Moodle Link

- http://moodle.epfl.ch/course/view.php?id=48