240ST1132 - Operations Management II

Coordinating unit: 240 - ETSEIB - Barcelona School of Industrial Engineering
Teaching unit: 
Academic year: 2018
Degree: MASTER'S DEGREE IN SUPPLY CHAIN, TRANSPORT AND MOBILITY MANAGEMENT (Syllabus 2014). (Teaching unit Optional)
ECTS credits: 4
Teaching languages: Catalan, Spanish

Teaching staff

Coordinator: Manel Mateo Doll
Others: Moliné Boixareu, Joan Ignasi
Gras Basañez, Iñaki
Torres Tomas, Juan Jose

Degree competences to which the subject contributes

Specific:
CESCTM1. Designing supply chains, or parts thereof, by applying the methods, techniques and tools that are appropriate for each specific function and purpose.
CESCTM4. Know and apply the modeling techniques and simulation optimization to solve the problems of design, operation and management of transportation systems.
CESC1. Analyze and optimize the operations associated with the supply chains of companies and organizations in general, both globally and in each of its parts: supply, distribution, production, transportation, storage and retrieval.
CESC4. Know and apply the techniques of modeling, simulation and optimization to solve the problems involved the design and management of supply chains.

Teaching methodology

The course consists of the following training activities:
* Theoretical sessions. A part of these sessions corresponds to a master class (lectures). And the rest is devoted to participatory-guided classes.
* Practical sessions. They correspond to a laboratory class where the students apply quantitative tools in order to understand how to apply the procedures introduced in lectures.
* This is complemented by self study, two applied tasks and a business game, all these types of activities are distance learning.
* Finally, we consider the evaluation activities (practical exam and final exam).

Learning objectives of the subject

The main objective is to introduce a set of decisions related to the management of manufacturing and logistics systems and supply chain, focussed on the operations management, and provide a basic conceptual view and some elementary management tools.
At the end of the course, the student is expected to be able to:
* Identify the types of problems in management of the manufacturing and logistics systems and developing the appropriate procedures of resolution to provide feasible and reasonable solutions.
* Identify which decisions to take in the short-term and medium-term in the behaviour of industrial engineering (Operations Management) and the most common criteria.
* Use the appropriate quantitative techniques to support the decision making.
* Develop the ability of reasoning in real situations of management.
* Manage several kinds of manufacturing and logistics systems (goods or services, product-focused or process-focused ...).
## Content

### TOPIC 1. Introduction

**Learning time:** 10h 30m  
- Theory classes: 1h  
- Practical classes: 1h 30m  
- Self study : 8h

**Description:**  

**Related activities:**  
Theoretical lecture.  
Exercise.

**Specific objectives:**  
Identify the managerial characteristics for different organizations and in particular for manufacturing and logistics systems.  
Place each of the decisions for productive and logistic systems in the general decision-making scheme.

### TOPIC 2. Inventory management

**Learning time:** 29h  
- Theory classes: 6h  
- Practical classes: 3h  
- Self study : 20h

**Description:**  

**Related activities:**  
Theoretical lecture.  
Short-duration activities.  
Exercises.

**Specific objectives:**  
Understand the information given in a situation of random inventory management.  
Determine the values of the variables used in the considered management model: fixed order quantity or fixed time period.  
Manage the inventory policies according to the given indicators of service quality.
### TOPIC 3. Operations planning

| Description: | Basics of planning. Aggregation and disaggregation. Mathematical models with hiring and firing, distribution, several levels of production … |
| Specific objectives: | Determine the Detailed Master Plan from the Aggregate Master Plan following a formalized procedure. |

### TOPIC 4. Scheduling

| Specific objectives: | Determine the type of flow in a given production system. Determine a schedule for manufacturing operations, using the appropriate procedure. |
## TOPIC 5. Purchasing

**Learning time:** 11h 30m  
Theory classes: 4h  
Practical classes: 1h 30m  
Self study: 6h

**Description:**  
The strategic function of purchasing. Key aspects of the purchasing and supplying. Align the organization, resources and efficiency in the purchasing department. Considerations related to suppliers. Macroeconomic impacts and culture of market segments on purchases.

**Related activities:**  
Theoretical lecture.  
A short-duration activity in theory class to reinforce the concepts.  
Exercise.

**Specific objectives:**  
Determine the best purchasing policy in a business.

## TOPIC 6. Global management in the organizations

**Learning time:** 7h 30m  
Theory classes: 4h  
Practical classes: 1h 30m  
Self study: 2h

**Description:**  
Release and control: KPIs. Approaches to operations management. Lean Management and TOC. Evolution: continuous improvement and reengineering.

**Related activities:**  
Theoretical lecture.  
A short-duration activity in theory class to reinforce the concepts.  
Practical exam.

**Specific objectives:**  
Identify areas of improvement in methods of work.  
Acquire a vocabulary of concepts used in management.
Qualification system

The evaluation is done by several methods:
(1) a final exam (EF) with a maximum of three hours duration, consisting of several theoretical and practical exercises in which the student must demonstrate the ability to apply learned knowledge and to develop specific procedures of resolution;
(2) an exam about exercises (EP) with a maximum of 1 hour duration, in which the student must demonstrate that he/she is able to solve situations slightly different from those worked out in class;
(3) evaluation during practical sessions (TP), in which the student must demonstrate his/her progressive learning during practical sessions.
(4) a business game (BG) in which the student must apply concepts in the simulation of a real case and learn the group work;
(5) works (TR), to develop solutions to complex real situations.

The final grade for the course \( N_{final} \) will be obtained:
\[
N_{final} = 0.6 \cdot N_{af} + 0.2 \cdot N_{ep} + 0.2 \cdot N_{ac}
\]

- \( N_{af} \): final exam evaluation
- \( N_{af} = EF \)
- \( N_{ep} \): practical sessions evaluation
- \( N_{ep} = \max \{ EP ; 0.5 \cdot TP + 0.5 \cdot EP \} \)
- \( N_{ac} \): progressive learning evaluation
- \( N_{ac} = \max \{ TR; 0.5 \cdot TR + 0.5 \cdot BG \} \)

Regulations for carrying out activities

The final exam (EF) and the exam about exercises (PE) are open books. Electronic devices are not allowed, except pocket calculator (mobile phone or any other devices are not allowed).
The evaluation during practical sessions (TP) will be held answering the requested questions, during each session.
The business game BG and the works TR will be made following the specific rules published in the electronic campus. The solution to works TR must be send before the deadline stated in the beginning of the course.
240ST1132 - Operations Management II

Bibliography

Basic:


Heizer, Jay H; Render, Barry; Martínez Parra, José Luis. Dirección de la producción y de operaciones: decisiones tácticas. 11a ed. Madrid [etc.]: Pearson Educación, cop. 2015. ISBN 9788490352854.

Heizer, Jay H; Render, Barry; Martínez Parra, José Luis. Dirección de la producción y de operaciones: decisiones estratégicas. 11a ed. Madrid [etc.]: Pearson Educación, cop. 2015. ISBN 9788490352878.

Complementary:


Others resources:

* Slides
* Description of the exercises.