

240EO031 - Supply Chain Design

Coordinating unit: 240 - ETSEIB - Barcelona School of Industrial Engineering
Teaching unit: 732 - OE - Department of Management
Academic year: 2017
Degree: MASTER’S DEGREE IN MANAGEMENT ENGINEERING (Syllabus 2012). (Teaching unit Compulsory) MASTER’S DEGREE IN SUPPLY CHAINS, TRANSPORT AND MOBILITY (Syllabus 2014). (Teaching unit Optional)
ECTS credits: 6
Teaching languages: Spanish

Teaching staff
Coordinator: Ribas Vila, Immaculada
Others: Rua Costa, Carlos

Degree competences to which the subject contributes

Specific:
1. Acquire concepts and techniques related to quantitative and experimental methods for analysis and decision making.
2. Analyze the risks and consequences of proposed solutions in various business subsystems and their social and environmental.
3. Apply quantitative and experimental methods for decision-making in situations where intangibles appear.
4. Apply theories and principles inherent in the production and logistics area in order to analyze complex situations and uncertainty, and make decisions using engineering tools.
5. Develop and implement sustainable and socially responsible solutions.

General:
6. Acquire skills related to the design and management of complex organizations, including people management, financial aspects, production, project management, and allocation and distribution of resources for managers and management problems.
7. Learn and master the analytical tools necessary for decision making in the organizational context more efficient.

Teaching methodology

Lectures on theory.
Practicals (problems and cases).

Learning objectives of the subject

Evaluate the robustness and resilience of supply chains and identify the most appropriate measures to strengthen them.

To do forecast in order to know the capacity requirements.

Define strategic capacity plans for a supply chain and compare them.
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Determine the optimal location of elements of the supply chain.

Apply methods and techniques to design the structure of the supply chain (network).

**Study load**

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours medium group: 27h</th>
<th>18.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours small group: 27h</td>
<td>18.00%</td>
</tr>
<tr>
<td></td>
<td>Self study: 96h</td>
<td>64.00%</td>
</tr>
</tbody>
</table>
## Content

<table>
<thead>
<tr>
<th>Topic</th>
<th>Learning time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Origins and evolution of the supply chain concept.</strong></td>
<td>2h</td>
<td><strong>Description:</strong> Origin and evolution of the concept of SC. Production, logistics and SC. Direct and reverse logistics. Closed-loop supply chains.</td>
</tr>
<tr>
<td><strong>Product policy.</strong></td>
<td>3h</td>
<td><strong>Description:</strong> Definition of the product. Strategies. Life cycle. Product portfolio. Phases in the product design. Diversification, simplification, standardization, modularity, value analysis.</td>
</tr>
<tr>
<td><strong>Forecast</strong></td>
<td>16h</td>
<td><strong>Description:</strong> Forecasting techniques</td>
</tr>
<tr>
<td><strong>Strategic capacity planning.</strong></td>
<td>45h 30m</td>
<td><strong>Description:</strong> Definition and measurement of capacity. Influential factors. Fixed and variable costs. Determination of capacity plans. Comparison of alternatives: description and critique of traditional indicators (NPV and IRR), other indicators. Financing.</td>
</tr>
</tbody>
</table>
### Location.

**Learning time:** 34h 30m  
Theory classes: 6h  
Practical classes: 6h  
Self study : 22h 30m

**Description:**  
Definition and characteristics. Calculation and optimization of the transport costs in the location of one or more facilities. Location of plants, warehouses and services. Supply problems

### Supply chain design.

**Learning time:** 24h  
Theory classes: 3h  
Practical classes: 4h  
Self study : 17h

**Description:**  
The SC as a network. Decisions and options. Methods and tools for network design. Use of models.

### Seleccion de proveedores

**Learning time:** 7h  
Theory classes: 2h  
Self study : 5h

**Description:**  
Se darán herramientas para identificar el tipo de relación que una empresa puede establecer con sus proveedores en función del producto o servicio que suministran.  
Se mostrarán herramientas de decisión multicriterio para seleccionar proveedores.  
**Specific objectives:**  
CE03

### Liability, robustness and resilience in the SC.

**Learning time:** 10h  
Theory classes: 2h  
Practical classes: 2h  
Self study : 6h

**Description:**  
Concepts of reliability, robustness and resilience. Concepts associated with the reliability of items. Reliability of systems: structure function, network reliability, reliability function, survival function. Measures to improve the reliability, robustness and resilience of the SC.
Evaluación contínua formada por una prueba parcial (PP), un examen final (EF), un examen de prácticas (EP), la realización y presentación de un trabajo práctico (TP) y un treball teòric (TT).

El trabajo práctico y teórico se evalúa tanto el documento escrito como la presentación individual por lo que los miembros del grupo pueden tener notas diferentes.

Nota = 0,45xEF + 0,15xPP + 0,15xEP + 0,15TP + 0,1TT

En caso de reavaluación, la nota del examen final se calcula: Nota = 0,60xRA + 0,15xEP + 0,15TP + 0,1TT

Siendo RA la nota del examen de reevaluación

**Qualification system**

**Regulations for carrying out activities**

Para realizar el examen parcial, final o reválida sólo se podrá disponer de un formulario manuscrito y una calculadora. Queda prohibido el uso de computadores y de móviles.

Para el examen de prácticas se debe traer el enunciado y las prácticas resueltas y una calculadora.

**Bibliography**

**Basic:**


**Complementary:**


**Others resources:**

Slides and documents in digital campus Atenea.