820014 - OP - Production Organisation

Coordinating unit: 295 - EEBE - Barcelona East School of Engineering
Teaching unit: 732 - OE - Department of Management
Academic year: 2019
Degree: BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN BIOMEDICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN ENERGY ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN MATERIALS ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)
ECTS credits: 6
Teaching languages: Catalan, Spanish

Teaching staff
Coordinator: BRUNO DOMÉNECH LÉGA
Others:
Primer quadrimestre:
BRUNO DOMÉNECH LÉGA - M11, M12
ERNESTO GARRIDO GODES - M12, M22, M32
XAVIER GRÉBOL NOGUERAS - T11, T12, T21
RUBÉN MARTÍN TORT - T12, T21, T22
RAFAEL PASTOR MORENO - M21, M22, M31, M32
GEMMA ROS ESCODA - M11, M12, M21, M22, M31, M32

Segon quadrimestre:
ERNESTO GARRIDO GODES - M21, M22
XAVIER GRÉBOL NOGUERAS - T11, T12, T21
MARC JUANPERA GALLEL - M12, M22
RUBÉN MARTÍN TORT - T12, T21, T22
GEMMA ROS ESCODA - M11, M12, M21, M22

Opening hours
Timetable: To be arranged by email.

Prior skills
None.

Requirements
None.

Degree competences to which the subject contributes
Specific:
4. Understand the applications of business organisation.
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5. Understand the basics of production and manufacturing systems.

**Transversal:**

2. ENTREPRENEURSHIP AND INNOVATION - Level 2. Taking initiatives that give rise to opportunities and to new products and solutions, doing so with a vision of process implementation and market understanding, and involving others in projects that have to be carried out.

**Teaching methodology**

The course has 4 different typologies of sessions along the semester:

- Theory: explanation of the theoretical concepts and resolution of small practical examples (20% of the time)
- Problems: resolution in group of practical exercises to deepen on the theoretical concepts (10% of the time)
- Laboratory: resolution of mathematical models using specialised software (10% of the time)
- Selflearning: guided activities as well as personal and non-in-person study (60% of the time)

**Learning objectives of the subject**

Show the main ideas of production, its relationship with the logistics area and other management elements of the enterprise
Give to the students the idea of the importance of decision making when managing logistic and production systems.
Prepare the student to different techniques to schedule and control activities.
Prepare the student to solve fuzzy problems.
Teach the student qualititative techniques applicable to the solution of management problems

**Study load**

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group:</th>
<th>45h</th>
<th>30.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours medium group:</td>
<td>0h</td>
<td></td>
<td>0.00%</td>
</tr>
<tr>
<td>Hours small group:</td>
<td>15h</td>
<td></td>
<td>10.00%</td>
</tr>
<tr>
<td>Guided activities:</td>
<td>0h</td>
<td></td>
<td>0.00%</td>
</tr>
<tr>
<td>Self study:</td>
<td>90h</td>
<td></td>
<td>60.00%</td>
</tr>
</tbody>
</table>
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## Content

<table>
<thead>
<tr>
<th>Module</th>
<th>Learning time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong></td>
<td>10h</td>
<td>Concept of production and productive system. Typologies of productive systems. Typology of decisions in production management. Concept and classifications of costs. Criteria for the evaluation and selection of investments.</td>
</tr>
<tr>
<td><strong>Scheduling</strong></td>
<td>30h</td>
<td>Characteristics and elements of programming problems. Typologies of bounds: potential, cumulative and disjunctive. Jshop and flowshop problems.</td>
</tr>
<tr>
<td><strong>Inventory managment for independent demand</strong></td>
<td>35h</td>
<td></td>
</tr>
<tr>
<td><strong>Production Planning</strong></td>
<td>25h</td>
<td>Concept of operations planning. Characteristics of a plan, horizon, frequency, robustness, degree of detail. Master plan, intuitive methods, Bowman model, linear models, models based on graphs theory.</td>
</tr>
</tbody>
</table>
The final mark of the course is calculated as follows:

\[ NF = \max\{NF_1; NF_2\} \]

\[ NF_1 = 0.5 \cdot EF + 0.2 \cdot EP + 0.2 \cdot PL + 0.1 \cdot AC \]

\[ NF_2 = 0.6 \cdot EF + 0.2 \cdot EP + 0.2 \cdot PL \]

**EF** = mark of the final examen  
**EP** = mark of the mid-term exam  
**PL** = mark of the laboratory evaluation  
**AC** = mark of the activities of continuous evaluation

In case of failing, a reevaluation exam can be carried out, which allows recovering 80% of the course (the mark of the laboratory exam, EL, is excluded). In order to be allowed to do such an exam, the global mark on the recorded part must not be lower than 3.

The students will be able to access the re-assessment test that meets the requirements set by the EEBE in its Assessment and Permanence Regulations (https://eebe.upc.edu/ca/estudis/normatives-academiques/documents/eebe-normativa-avaluacio-i-permanencia-18-19-aprovat-je-2018-06-13.pdf)
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Bibliography

Basic:


Complementary:


