240EO321 - Industrial Scheduling Techniques

Coordinating unit: 240 - ETSEIB - Barcelona School of Industrial Engineering
Teaching unit: 732 - OE - Department of Management
Academic year: 2019
Degree: MASTER’S DEGREE IN AUTOMOTIVE ENGINEERING (Syllabus 2019). (Teaching unit Optional)
MASTER’S DEGREE IN MANAGEMENT ENGINEERING (Syllabus 2012). (Teaching unit Optional)
ECTS credits: 3
Teaching languages: Spanish

Teaching staff
Coordinator: Bautista Valhondo, Joaquin
Others: Bautista Valhondo, Joaquin
Rami Rivas, Ruben

Prior skills
- Numerical and modelling skills
- Reflexive, analytical and a synthesis attitude
- Proactivity and responsibility

Requirements
- Production and Management

Teaching methodology
Master class: The professor exposes the theory and practical contents of the course, with the active participation of the students
Practical class: the Professor solves, with the active participation of the students, exercises related to the theory contents of the course
Realization of the Project: consists on taking part in a project to solve a problem of management engineering nature. Depending on the characteristics of the matter, the student can carry out the project individually or in teams. The student/s will have to write the memory of the project. Besides, the Professor may require the oral defense of the memory in front of a university court. The defense includes the exposition of the most relevant contents of the memory and a debate with the court about the facts related to the project

Learning objectives of the subject
Present, from a practical point of view, tools and procedures of general use generally used in the resolution of problems in industrial management.
This course aims to:
- Introduce the students the set of knowledge, aptitudes and attitudes which will allow them to solve generic problems of industrial management, known as "problemsolving"
- Provide the students a structured methodology to face the possible problems in their future working life
- Provide the students a wide range of tools and techniques, more intuitive (soft techniques) that the ones exposed on other courses of the degree, to act in each one of the resolution phases of a problem: definition, data gathering, analysis, search of solution, selection of alternatives, implementation.
# Study load

<table>
<thead>
<tr>
<th>Total learning time: 75h</th>
<th>Hours medium group:</th>
<th>27h</th>
<th>36.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Self study:</td>
<td>48h</td>
<td>64.00%</td>
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</table>
## Content

<table>
<thead>
<tr>
<th>UNIT 1. HUMAN FACTOR IN INDUSTRY</th>
<th>Learning time: 7h</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 1h 30m</td>
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<tr>
<td></td>
<td>Practical classes: 2h 30m</td>
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<td></td>
<td>Self study: 3h</td>
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**Description:**

**Related activities:**
Practice 1.1 Simulation of a negotiation
Exposition by the Professor
Teamwork in class
Coursework outside the class
Teamwork outside the class

<table>
<thead>
<tr>
<th>UNIT 2. METHODOLOGY FOR THE SELECTION AND PROJECT MANAGEMENT I</th>
<th>Learning time: 16h</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 2h 30m</td>
</tr>
<tr>
<td></td>
<td>Practical classes: 7h 30m</td>
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<tr>
<td></td>
<td>Self study: 6h</td>
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</tbody>
</table>

**Description:**
PHASE I: DEFINITION
Stratification: Sources of problems. Tools: brainstorming, affinity diagram, SWOT.
Exercises. Definition of the Project. Tools: IN-OUT, SIPOC, QFA. Exercises

**Related activities:**
Practice 2.1: Development of the Definition phase of a project.
Teamwork in class
Coursework outside class
Teamwork outside of class
Exposition by the Professor
Teamwork in class
## UNIT 3. METHODOLOGY FOR THE SELECTION AND PROJECT MANAGEMENT II

**Description:**
PHASE II: ANALYSIS OF THE SITUATION
The client. VOC. Metrics. Tools, survey, process map, Pareto, histograms, boxplot. Exercises

**Related activities:**
Practice 3.1 Development of the Analysis phase of a project
Exposition by the professor.
Teamwork in class
Coursework outside of the class
Teamwork outside of the class

**Learning time:** 15h
- Theory classes: 2h 30m
- Practical classes: 6h 30m
- Self study: 6h

## UNIT 4. METHODOLOGY FOR THE SELECTION AND PROJECT MANAGEMENT III

**Description:**
PHASE III: ROOT-CAUSE ANALYSIS

**Related activities:**
Practice 4.1 Development of the ROOT-CAUSE analysis phase of the project
Exposition by the Professor
Teamwork in class
Coursework out of class
Teamwork out of class

**Learning time:** 30h
- Theory classes: 6h 30m
- Practical classes: 5h 30m
- Self study: 18h
<table>
<thead>
<tr>
<th>UNIT 5. METHODOLOGY FOR THE SELECTION AND PROJECT MANAGEMENT IV</th>
<th>Learning time: 9h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Theory classes: 2h 30m</td>
</tr>
<tr>
<td>PHASE IV: PROPOSED SOLUTIONS</td>
<td>Practical classes: 6h 30m</td>
</tr>
</tbody>
</table>

**Related activities:**
- Practice 5.1 Development of the Proposal Phase of a project
- Exposition by the Professor
- Teamwork in class
- Coursework out of class
- Teamwork out of class

<table>
<thead>
<tr>
<th>UNIT 6. METHODOLOGY FOR THE SELECTION AND PROJECT MANAGEMENT V</th>
<th>Learning time: 9h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Theory classes: 2h 30m</td>
</tr>
<tr>
<td>PHASE V: EXECUTION</td>
<td>Practical classes: 6h 30m</td>
</tr>
</tbody>
</table>

**Related activities:**
- Practice 6.1 Development of the Execution phase of a project
- Exposition by the Professor
- Teamwork in class
- Coursework out of class
- Teamwork out of class
Planning of activities

<table>
<thead>
<tr>
<th>Practice 1.1</th>
<th>Simulation of a Negotiation</th>
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<tbody>
<tr>
<td>Practice 2.1</td>
<td>Development of the Definition Phase in a Project</td>
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<tr>
<td>Practice 3.1</td>
<td>Development of the Analysis Phase in a Project</td>
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<tr>
<td>Practice 4.1</td>
<td>Development of the Root-Cause Analysis Phase in a Project</td>
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<tr>
<td>Practice 5.1</td>
<td>Development of the Proposal Phase in a Project</td>
</tr>
<tr>
<td>Practice 6.1</td>
<td>Development of the Execution Phase in a Project</td>
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Qualification System

In this course, the work carried out along the course will be particularly valued, in such a way that the mark of the continuous evaluation has a very important weight on the total course mark. The continuous evaluation is based on the qualification of the practices and projects which, either individually or in groups, are carried out by the students. Along the course, at least 10 of these qualifications will be obtained, making up the continuous evaluation mark. The final exam will consist on a public presentation by teams related to a small-project requested to the students.

Final qualification system:
The final qualification will be obtained from an addition of the partial marks, individual and by teams, corresponding to the continuous evaluation, and the mark related to the evaluation of the fulfillment of the presentation in teams in the final exam.

Regulations for carrying out activities

The final exam is a presentation in teams of a small-project. It does not state any additional rule to the ones natural from a civic behaviour, common sense and respect for other colleagues when doing the presentations.
Bibliography

Basic:


Shapiro, Jeremy F. Modeling the supply chain. 2nd ed. Belmont [etc.]: Thomson Brooks/Cole, cop. 2007. ISBN 049512611X.


Others resources:

Hyperlink

http://www.prothius.com/docencia/?filtre=apunt&filtre2=TOI&lang=es&pag=1

https://ocw.upc.edu/curs_publicat/240AU018/2016/1

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