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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 writte 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.

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Study load

Total learning time: 75h	Hours medium group:	27h	36.00%
	Self study:	48h	64.00%

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Content

UNIT 1. HUMAN FACTOR IN INDUSTRY

Learning time: 7h

Theory classes: 1h 30m
Practical classes: 2h 30m
Self study : 3h

Description:
Profiles. Industrial environment. Communication techniques. Orientation to projects. Basic rules. Orientation when solving a problem

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

UNIT 2. METHODOLOGY FOR THE SELECTION AND PROJECT MANAGEMENT I

Learning time: 16h

Theory classes: 2h 30m
Practical classes: 7h 30m
Self study : 6h

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

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UNIT 3. METHODOLOGY FOR THE SELECTION AND PROJECT MANAGEMENT II

Learning time: 15h

Theory classes: 2h 30m
Practical classes: 6h 30m
Self study : 6h

Description:
PHASE II: ANALYSIS OF THE SITUATION
The client. VOC. Metrics. Tools, survey, process map, Pareto, histpgrams, 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

UNIT 4. METHODOLOGY FOR THE SELECTION AND PROJECT MANAGEMENT III

Learning time: 30h

Theory classes: 6h 30m
Practical classes: 5h 30m
Self study : 18h

Description:
PHASE III: ROOT-CAUSE ANALYSIS
Analysis of the main causes. Identification process. Obtention of the data and comparation of hyphotesis. Determination of facts. Cause-effect relation. Tools: Ishikawa, LT, interrelation diagram, QFD. F-test, ANOVA, regression. Exercises

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

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UNIT 5. METHODOLOGY FOR THE SELECTION AND PROJECT MANAGEMENT IV

Learning time: 9h

Theory classes: 2h 30m
Practical classes: 6h 30m

Description:
PHASE IV: PROPOSED SOLUTIONS
Priorities. Potential risks. Trial. Implementation decision. Action plan. Tools: benchmarking, PM, RA, FMEA, SS.
Exercises

Related activities:
Practice 5.1 Development of the Proposal Phase of aproject
Exposition by the Professor
Teamwork in class
Coursework out of class
Teamwork out of class

UNIT 6. METHODOLOGY FOR THE SELECTION AND PROJECT MANAGEMENT V

Learning time: 9h

Theory classes: 2h 30m
Practical classes: 6h 30m

Description:
PHASE V: EXECUTION
Solution transfer. Plans. Revision of plans. Tools: WP, Chart control. Proposal of a small-project

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

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Planning of activities

PRACTICE 1.1 SIMULATION OF A NEGOTIATION

PRACTICE 2.1 DEVELOPMENT OF THE DEFINITION PHASE IN A PROJECT

PRACTICE 3.1 DEVELOPMENT OF THE ANALYSIS PHASE IN A PROJECT

PRACTICE 4.1 DEVELOPMENT OF THE ROOT-CAUSE ANALYSIS PHASE IN A PROJECT

PRACTICE 5.1 DEVELOPMENT OF THE PROPOSAL PHASE IN A PROJECT

PRACTICE 6.1 DEVELOPMENT OF THE EXECUTION PHASE IN A PROJECT

SMALL-PROJECT OF AN INDUSTRIAL PROBLEM

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 evalution has a very important weight on the total course mark. The continuous evalution 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 consit 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 evalution, and the mark related to the evaluation of the fullfilment 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

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Bibliography

Basic:

Salvendy, Gavriel. Handbook of industrial engineering : technology and operations management. 3rd ed. New York [etc.]: John Wiley & Sons, cop. 2001. ISBN 9780470241820.

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

Maynard, Harold B. Manual de ingeniería y organización industrial. 3ª ed. Barcelona: Reverté, S.A., 1985. ISBN 8429126791.

Others resources:

Hyperlink

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

Resource

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

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