

62954 - Design enhancement through quality techniques

Syllabus Information

Academic Year: 2019/20

Subject: 62954 - Design enhancement through quality techniques

Faculty / School: 110 -

Degree: 562 - Master's in Product Development Engineering

ECTS: 4.5

Year: 1

Semester: Second semester

Subject Type: Optional

Module: ---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The aim of this course is that the students

- gain the knowledge and understanding that provide an opportunity for originality when developing and/or applying ideas, often in the research context;
- can apply their knowledge and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study;
- have the ability to integrate knowledge, handle complexity, and formulate hypothesis based on information that, although incomplete or limited, includes reflections on social and ethical responsibilities linked to the application of their knowledge and arguments;
- communicate their conclusions, knowledge, and supporting arguments to a specialist and non-specialist audience in a clear and unambiguous way;
- acquire the learning skills that enable them to continue studying in an autonomous way.

All these aspects belong to the general competences of the Master's, but, in particular, the aim of this course is that the students acquire the ability to implement techniques and Quality methods during the stages of design and development of the product life-cycle, which is an aspect of great importance in the world in which we live. A wide range of teaching and learning tasks are implemented, such as the analysis and discussion of theoretical contents, lectures, case studies and student participation, among others.

4.2.Learning tasks

The course includes the following learning tasks:

- Lectures (10 hours). The teacher explains the theory contents and encourages discussion among the students to draw conclusions. Some of the contents include different conceptual principles, methodologies and tools to capture information in order to analyze the design in the social context.
- Practice sessions (18 hours). Sessions to solve problems and case studies. Details of the different practical exercises will be provided in class.
- Laboratory sessions (12 hours).
- Assignments (30 hours).
- Tutorials (5 hours).
- Autonomous work and study (35.5 hours).
- Assessment tests (2 hours).

4.3.Syllabus

The course will address the following topics:

1. Introduction to improvement. Lean Manufacturing. Kaizen. Tools for improvement and problem solving: Reengineering, PDCA, 7 + 7 tools.
2. Tools for Control: Design Review (quality audits).
3. Planning tools Quality: Benchmarking, Value analysis, functional analysis - FAST, QFD, FMEA and Fault Tree.
4. DOE, Definition Statistical of Tolerances, Analysis of durability and reliability.

4.4.Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course, will be provided on the first day of class.

4.5.Bibliography and recommended resources

- Goldratt, Eliyahu M.. "Cadena Crítica"/Eliyahu M.Goldratt Madrid:Ediciones Díaz de Santos
- Goldratt, Eliyahu M.. La meta : un proceso de mejora continua / Eliyahu M. Goldratt, Jeff Cox . - Ed. rev. Madrid : Díaz de Santos, D.L. 1993
- González Gaya, Cristina. Técnicas de mejora de la calidad / Cristina González Gaya, Rosario Domínguez Navas, Miguel Ángel Sebastián Pérez. Madrid : Universidad Nacional de educación a distancia, [2013]
- Pfeifer, Tilo. Manual de gestión e ingeniería de la calidad / Tilo Pfeifer, Fernando Torres . - 1ª. ed. española act. y amp., 1ª reimp. Zaragoza : Mira, 2002
- Porter, Michael E.. Ventaja competitiva : creación y sostenimiento de su desempeño superior / Michael E. Porter . - [1a ed., 8a reimp.] México : Compañía Editorial Continental, 1992
- Womack, James P. Lean thinking : cómo utilizar el pensamiento Lean para eliminar los despilfarros y crear valor en la empresa / James P. Womack, Daniel T. Jones ; revisión, adaptación y prologo de Lluís Cuatrecasas . Barcelona : Gestión 2000, D.L. 2004