Course guide
220674 - 220674 - Quantitative Research Methods

Last modified: 19/04/2023

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 732 - OE - Department of Management.

Degree: MASTER'S DEGREE IN MANAGEMENT ENGINEERING (Syllabus 2012). (Optional subject).

Academic year: 2023 **ECTS Credits:** 3.0 **Languages:** Catalan, Spanish, English

LECTURER

Coordinating lecturer: ANTONIN SEBASTIEN PONSICH

Others:

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
2. Develop and present a research proposal according to the criteria of the international scientific community.

Generical:
1. Ability to effectively communicate their findings, knowledge and concluding reasons to skilled and unskilled audiences, clearly and unambiguously.

TEACHING METHODOLOGY

The course is divided into three parts:
Sessions of content explanation
Practice sessions
Authonomous work on exercises and activities

In the content explanation sessions the teachers will convey to the students the fundamentals of the techniques of quantitative data analysis, together with examples of applications in industrial engineering research
In the practice sessions the students will learn to use the tools (i. e., software) of quantitative data analysis through examples of research in industrial engineering.
In the authonomous work sessions students will work on exercises of application of similar dificulty than the ones introduced in the practical sessions.

LEARNING OBJECTIVES OF THE SUBJECT

The course of quantitative reserch methods introduces students to the concepts, principles and fundamentals of scientific research with quantitative data in industrial engineering, presenting the fundamentals of the data analysis techniques, and the use of quantitative data analysis tools.

STUDY LOAD

Type	Hours	Percentage
Guided activities	16,0	21.33
Self study	48,0	64.00
Hours large group	8,0	10.67

Type	Hours	Percentage
Hours medium group	3,0	4.00

Total learning time: 75 h

CONTENTS

Module 1: Fundamentals of quantiative data analysis

Description:
Introduction
Research design with quantitative data
Sampling techniques
Data analysis techniques: factor analysis, linear regression, structural equation models

Related activities:
Exercices
Exam

Full-or-part-time: 36h
Theory classes: 12h
Self study : 24h

Module 2: Tools for quantitative data analysis

Description:
Introduction to quantitative data analysis software R
Linear models and generalized linear models with R
Factor analysis with R
Structural equation models with R

Related activities:
Exercices
Exam

Full-or-part-time: 39h
Theory classes: 12h
Guided activities: 3h
Self study : 24h

GRADING SYSTEM

The grade is obtained through four assignments. Students with non-satisfactory results on the exam can enhance their grade by doing an exam. Final grade will be calculated with the best score on the two exams the students have taken. All students can take the second exam.