Curricular Unit Form (FUC)

Course:	**INDUSTRIAL ENGINEERING MANAGEMENT**		
Curricular Unit (UC)	**Techniques for Quality**	Mandatory	**X**
		Optional	
Scientific Area:	Engineering and industrial management		
Year: **1º**	Semester: **2º**	ECTS: **7**	Total Hours: **4,5**
Contact Hours:	T:	TP:**67,5** PL:	S: OT: TT:
Professor in charge	Academic Degree /Title	Position	
António João Feliciano Abreu	**PhD**	**Assistant Professor**	

T- Theoretical ; TP – Theory and practice ; PL – Laboratory ; S – Seminar ; OT –Tutorial ; TT – Total of contact hours

Entry into Force	Semester: **Winter**	Academic Year: **2016/2017**

Objectives of the curricular unit and competences (max. 1000 characters)

It is intended that, at the end of this course, the students get competences and capacities that allow them to:
- Understand the role of Design of Experiments, Taguchi methods and Statistical Process Control (SPC) within a TQM environment
Understand the relevance of SPC might have in product/service and process improvement
- Apply the methodology for implementing statistical control charts;
- Study the process capability.

Syllabus (max. 1000 characters)

Introduction - The role of statistics in the design and continuous improvement of products / services and processes.
Statistics concepts - Basic concepts, statistical distributions, sample distributions, parameter estimation, hypothesis tests.
Design of Experiments and Taguchi Methods
Statistical Process Control (SPC) - Advantages of control charts, traditional control charts - Variables and attributes,
interpretation of charts. Process capability. Applications.
Statistical Control for "Short Run" - Types of charts and their applicability. Z and W charts. Q charts.
Acceptance sampling - Basic Concepts. Control by attributes and variables

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Demonstration of the syllabus coherence with curricular unit's objectives (max. 1000 characters)

The aims to be achieved by the students are directly related to the main syllabus topics, being achieved through attendance to classes, solve exercises and accomplish team work' projects related to topics discussed along the semester.

Teaching methodologies (including evaluation) (max. 1000 characters)

Whenever appropriate the teaching methodology includes lectures with oral presentation, exhibition of real case
studies, solving exercises, and use of software in the laboratory.
To develop competences and teamwork skills, students within a group have to perform 1 project, its report and presentation.
In order to be approved, students must:
Have a written exam grade ≥ 9.5
Have a project grade ≥ 9.5
The final grade is given by the mean of the classifications above.

Demonstration of the teaching methodologies coherence with the curricular unit's objectives (max. 3000 characters)

Taking into account the aims of this curricular unit, the teaching methodology used allows the students to have contact in class and in the laboratory with pedagogical resources that allow them to obtain theoretical and practical competences on the fundamental concepts of this course.

Main Bibliography (max. 1000 characters)

Montgomery DC. (2005), Introduction to Statistical Quality Control, 5ª Edição, Wiley, New York.
Pyzdek, T. (1999), Quality Engineering Handbook, Marcel Dekker, New York.
Ryan, T. P. (2000), Statistical Methods for Quality Improvement, 2.ª ed., John Wiley & Sons, New York.
Pereira ZL, Requeijo JG. (2008) Qualidade: Planeamento e Controlo Estatístico de Processos, Co-edição da Fundação da FCT/UNL e da Editora Prefácio, Lisboa.
Ryan TP. (2000), Statistical Methods for Quality Improvement, 2ª Edição, Wiley, New York.