Module Title: Experimental Design and Optimization	
Module Code: DA0301	
Maximum Number of Students: 20	
Total ECTS Credits 2	

Notional Learning Hours
(a) Contact Time -   10 h
(b) Private Study -   10 h

Format of Teaching:

Lectures	5 h
Laboratories or Practicals	0 h
Other	5 h

Teaching Strategy:
Formal lectures in 60 min timetable.
Computer lab exercises (30/60 min)

Convener:
M. Palma

University:
University of Cádiz

Language of Tuition:
English

Module Description - The Purpose or Aims:

1. To introduce fundamentals of experimental design and optimization for analytical methods
2. To introduce several ways to run an experimental design
3. To show how to apply experimental design and optimization reducing the number of experiences

Learning Outcomes:

At the end of the module the learner is expected to be able to:
1. Correctly describe the principles of experimental design
2. Select the most adequate design for several analytical problems
3. Correctly develop an experimental design

Summary of Course Content:

Experimental design and optimization is going to be show as a set of tools for reducing the number of experiences needed for the development of an analytical method. Several considerations, regarding the most adequate design is going to be presented as a way to help the students to know how to decide the best option depending on the specific problem. Two different packages will be used for the students' instruction on experimental design and optimization.

Transferable Skills Taught:

Communication:
    To be able to present an experimental design

Information Tecnhology:
    Ability to apply experimental design in lab works.

Assessment Methods:

1. LO1 – Written Examination (20%)
2. LO2 – Written Examination (40%)
3. LO3 – Group Work Discussion (40%)

Assessment Criteria:

Treshold
LO1 – to correctly describe the principles of experimental design
LO2 – to be able to identify what experimental design cannot be applied in some analytical works
LO3 – to run an experimental design correctly

Good
LO1 – to correctly understand the results from an experimental design
LO2 – to be able to determine the most adequate experimental design for different lab works
LO3 – to be able to develop an experimental design for at least two different analytical problems

Excellent
LO1 – to be able to describe the main advantages of different experimental designs
LO2 – to be able to determine if an experimental design has been applied correctly
LO3 – to develop two different experimental designs for the same analytical problem

Resource Implications of Proposal and Proposed Solutions:

Lecture notes will be available for students.
Recommended reading:
"Experimental Design and Analysis" L E. Melamed, S RI Brown. Sage Publications 1990
"Pharmaceutical Experimental Design" G A. Lewis, D. Mathieu. Informa Health Care. 1999.