66234 - Advanced Statistics

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	531 - Master's in Chemical Engineering
ECTS	3.0
Course	2
Period	First semester
Subject Type	Optional
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The learning process will take place at several levels: lectures, problem solving (cases), practical sessions using specific software, oral presentations and deliverables, with increasing the level of student participation. In the lectures, the theoretical bases that make up the subject and solve some problems will model. The kinds of problems and cases and practical sessions and special practice are effective complement to the lectures, as they will allow verify compression of matter. The goal is to develop in students a viewpoint more applied and critical. The deliverables constitute the most important part of the evaluation in which the student will establish the pillars of academic success.

5.2.Learning activities

- Sessions in computer lab (30 h) where the theoretical concepts of the topics will be presented, problems will be solved by the teacher and by students under supervision. Minitab Statistical Software will be used to present different models and address and analyze data associated to problems in the field of Chemical Engineering.

- Study and personal work (31 h no supervised). Study throughout the semester is recommended. The above practices and individual presentation sessions require a time of personal work to complete the job (resolution and exposure of a problem) for each of the thematic blocks

- Personalized teacher-student session (7h).

- Evaluation (3 h). Students will make an individual exhibition about their project works, will last up to 15 minutes.

5.3.Program

The description of contents in the subject is the following,

- Introduction. Fundamentals of Statistical Inference
- Design of Experiments.
- Designs with randomized blocks.
- 2 K and fractional designs.
- Sequential designs.
- Linear and nonlinear regression.
- Response surface.
- Statistical modeling.

5.4.Planning and scheduling

The classes are held according to schedule established by EINA also teachers inform their hours of tutoring.

Sessions of two hours are held in the computer lab, to develop skills in the approach to problems related to real situations (modeling or data analysis), resolution and interpretation of results. Problems associated with each learning module will be proposed as tasks that must submit for review by the teacher. This training activity identifies problems and remedies them in a continuous learning process.

5.5.Bibliography and recomended resources

BB	Lazic, Zivorad R.. Design of experiments in chemical engineering : a practical guide / Zivorad R. Lazic . - 1st ed., 1st repr. Weinheim : Wiley-VCH, 2007
BB	Montgomery, Douglas C.. Design and analysis of experiments / Douglas C. Montgomery . - 6th ed. Hoboken, NJ : John Wiley & Sons, cop. 2005
BB	Myers, R. H. Response surface methodology: process and product optimization using designed experiments / Myers, R. H., Montgomery, D. C., Anderson-Cook, C. M. John Wiley & Sons, 2016

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Peña Sánchez de Rivera, Daniel.
Regresión y diseño de experimentos /
Daniel Peña Madrid : Alianza Editorial,
D.L. 2010