Code	INI394L	Prerequisites	INI310
Name	Design of Experiments Laboratory	Co-requisites	INI394

Credits	Contact Hours
1	22
Categorization of credits	
Math and basic science	
Engineering topic	X
Other	

Coordinator's name	Omar Aponte Contreras, M.E.

Text book
Go on, O. (2019). General instructions about the subject. Academic presentation. Gutiérrez Pulido, H., & Vara Salazar, R. d. l. (2008). Analysis and design of experiments (2nd ed. —.). McGraw Hill. Montgomery, D.C. (2005). Design And Analysis Of Experiments (2a. Ed.). Limusa Wiley.
Other supplemental materials
Minitab Inc. (2007). Meet Minitab 15 for Windows. United States. Go on, O. (2019). Basic experimentation with Minitab. Academic presentation.

Description	
Design and statistical analysis of experiments, to identify the effect on a response variable that has the change in the different levels of factors of a process. The course covers specific topics of the industrial engineering career, based on the application of statistical knowledge as a tool to optimize processes and/or systems. The content of the subject begins by addressing what is the Introduction to Design Experiments. And then we move on to the topic Statistical inference. We will perform what are Factor Experiments; Block Factor Experiment; Factorial Experiment; 2k Factorial Design; 2k Factorial Design with Block and Melt; 2k Fractional Factorial Design.	
Type of course	Required ☒ Elective ☐

Specific goals for the course	
Outcomes of instruction	1. Know the techniques that make up the Design of Experiments. 2. Recognizes the situations in which you can apply the different tools of Experimental Design. 3. Generate sufficient alternatives to solve the problem. 4. Sets parameters that determine process responses 5. Objectively select the best solution from the solutions generated by the model

	6. It adequately communicates the appropriate arguments justifying its choice. 7. Design control systems that ensure your solution works properly over time
Student outcomes	SO1. Identifies, formulates and solves complex Engineering problems through the application of Engineering, Science and Mathematics principles. SO2. Apply and use the engineering design process to produce solutions that meet specific needs, taking into consideration public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors. SO6. Develops and conducts appropriate experimentation, in which they analyze and interpret data, as well as use engineering criteria to draw conclusions. SO7. Acquire and apply new knowledge using appropriate learning strategies.

Topics
Unit I. Introduction to the Design of Experiments. Unit II. Statistics Review. Unit III. Experiments manipulating a single factor. Unit IV. Experiments designed using blocks. Unit V. Multifactorial experiments. Unit VI. Multifactorial experiments with two levels (2^k). Unit VII. Fractionated multifactorial experiments (2^k-p).