



Code	INI-385L	Prerequisites	INE-354, INE-354L, ING-215, INM-377, INM-377L
Name	Process Automation Lab	Co-requisites	INI-385

Credits	Contact Hours
01	22
Categorization of credits	
Math and basic science	
Engineering topic	X
Other	

Coordinator's name	Prof. José Rafael Silva Archetti
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Text book
Training, F., (2015), Installation of equipment and elements of industrial automation systems, IC Editorial.
Other supplemental materials
Silva, J., (2017), Laboratory Manual Industrial Automation, Santo Domingo, Dominican Republic, INTEC. Alvarez, D., (2015), Manual of hydraulics, pneumatics and PLC programming: Industrial automation, Mexico, Mexican Robotics and Mechatronics Association. D'Addario, M., (2017), Industrial Automation - Technology, Representation and Functions - Volume I, Createspace. Manufactured by: Made In Spain [TV series] (2013) Spain: Mediapro, Radiotelevisión Española.

Description
<p>Process automation laboratory is a practice-oriented subject where the student will develop skills to design and install multiple elements of a control system for the automation of industrial processes or improve existing ones.</p> <p>Each student will acquire practical knowledge about the use of devices and their individual behavior to automate small processes, using relays, electric motors, pneumatic valves, single and double effect pneumatic cylinders, industrial sensors and switches.</p> <p>For the automation of larger and more complex processes, the student will learn to use Programmable Logical Controllers (PLCs), developing ladder diagrams, mnemonic codes and electrical connection diagrams for the interconnection of the PLC with peripheral devices.</p>
<div>Type of course</div> <div> Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/> </div>

Specific goals for the course

Outcomes of instruction	<ol style="list-style-type: none"> 1. It defines the problem by identifying some of the key insights. 2. It identifies some of the causes of the problem, using some complex techniques to find the causes of the problems or to validate them. 3. It proposes solutions to the problem using basic principles and methods of engineering. 4. It develops sufficient arguments to justify the selected solution, taking into account the criteria established in the problem definition. 5. Clearly identifies needs and may set limited design objectives, criteria and constraints. 6. It generates sufficient design alternatives, with some level of correlation with established criteria and restrictions and weakly supported in engineering sciences or other sciences. 7. Please select alternatives taking into account some restrictions. 8. Communicates design in a limited way by omitting some engineering standards and norms.
Student outcomes	<p>SO1. Identifies, formulates and solves complex engineering problems by applying Engineering, Science and Mathematics principles.</p> <p>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.</p>

Topics
Unit I. Fishertechnik parts Unit II. Wired Logic I Unit III. Wired Logic II Unit IV. Pneumatics V. PLC unit