

Course Syllabi

1. INGE-00017 INSTRUMENTATION AND CONTROL

2. 96 credits hours.

3. Bibliography

- Instrumentación y control básico de procesos, Sánchez, J. A., 2013
- Fundamentos básicos de instrumentación y control., Gutiérrez Hinestroza, M. D. V., & Iturralde Kure, 2017

4. Specific Course Information

- a. It introduces the student in the field of automation of industrial processes based on the knowledge of the functioning of automation systems both Mechanical, Electromechanical and Programmable, the principle of operation of the different sensors and elements of final action that are used in automatic processes is studied. Its relation to the discharge profile the student establishes the parameters of control in a real production system. It prepares the student in the interpretation of vocabulary and syntax used in the automation of industrial processes, finally the knowledge is consolidated with applications in Robotics recommending the best procedure for the optimization of a production system. The subject provides in the ABET indicator as detailed below: RA1. Troubleshooting, RA5. Teamwork, RA6. Experimentation.
- b. Prerequisites:
 - INDU-00010 MAINTENANCE ENGINEERING

5. Learning Objectives of the Course

- a. To know the functioning of automation and robotics systems.
 - To introduce students in the field of automation of industrial processes.
 - To know the principle of operation of the different sensors and elements of final action that are used in automatic processes
 - To develop general guidelines for designing, modifying, adapting and redesigning automation systems
 - To predispose students in the interpretation of vocabulary and syntax used in automation Industrial processes, such as research tools for new technologies for automation
 - Analyze robotics applications in the industrial field for optimization.

b. Learning Outcomes

- Ra 1, ra5, ra6 develop first order electromechanical control systems
- Ra 1, ra5, ra6 getting to know the working principle of robotics
- Ra 1, ra5, ra6 know the safety rules in automatic processes
- Ra 1, ra5, ra6 design automation systems by applying logic control programmers (plc)
- Ra 1, ra5, ra6 know the principle of operation of control elements, sensors and actuators

6. Course Topics

- Unit 1: control system
- Unity 2: measure and sensor instruments
- Unity 3: final control elements
- Unit 4: siemens-log programmable amounts
- Unity 5: robotic funds