

## Course

# Instrumentation & Control engineering drawings design and metric computation™

**Dates:** by agreement, 2020

**Location:** onsite or online.

**Length:** 2 days (8:00 AM – 4:00 PM)

**Certificate:** Certificate issue upon completion.

**Fee:** by agreement

This course includes a useful handbook containing actual engineering drawings of typical projects, and according to international standards. The handbook could be used by participants in their projects that they will have to face.

**Description:** This course will present the methodology to design and develop the whole drawings required for instrumentation and control systems throughout each phase of a project, and its relationship with other engineering disciplines such as civil, process, mechanical and electrical. Also, it will be do practical exercises using deliverables of projects built by the same specialist who will give the course.

**Designed for:** engineers, designers, technicians, and university students linked to the sectors of oil & gas, iron and steel, electric power, sugar refinery, paper factories, manufacturing companies, consulting engineering companies, food and beverage, among others.

### **You will learn, but are not limited to, the following:**

- Reinforce the reading and interpretation of all the diagrams, schematics and drawings generated by Instrumentation and Control design engineers.
- Become familiar with the drawings that will be generated by the process such as PFD's, PID's, and others.
- To know activities and all drawings that an Instrumentation and Control engineer should to develop in a typical multi-disciplinary project.
- To learn the type of information in each drawing and the sequence of elaboration of them in a typical project.
- Design the necessary drawings of a project, using and applying the national and international standards such as PDVSA, PIP, API, ISA, ANSI, NFPA, CEN, IEEE, among others.
- Prepare lists of instruments, metric computation (construction works items). Scope and Payment.

### **General Content:**

- Introduction and fundamentals of engineering drawings.
- Process Flow Diagram, (PFD's). Review.
- Piping and Instrument drawings (P&IDs) design. International Symbology, ISA Standards.
- Design of location drawings and electrical & pneumatic routes.
- Interconnection signals diagram design and junction boxes, schematics and loops.
- Fundamentals of Hazardous Area Classifications
- Application of international standards: ISA, ANSI, NFPA, CEN, IEEE, among others.
- Preparation of list of mechanical and electrical equipment, instruments and materials.
- Description of Item (construction items), scope and payment of metric computations.

### **Methodology and exercises:**

- By setting up an actual project, participants shall design and develop: P&IDs, location plans, electrical routes, interconnection drawings, loop diagrams, installation details.

**Instructor:**

Mr. Argenis Garcia, a specialist in Instrumentation & Control, is an electrical engineer (University of Colorado), with a specialization in project management (Andres Bello Catholic University, UCAB, Venezuela), with 35 years of experience in design, maintenance, construction, commissioning, operations, and technical training. He has worked in cryogenics, refineries, petrochemicals, orimulsion and oil dehydration plants, the sweetening of gas, gas compressor plants, tank farms, pump stations, flow and discharge stations, clusters, transfer pump and multiphase stations and oil&gas pipelines. Duties included management of all stages of projects and engineering, specifications and selection of instruments, and drawings design, QAQC, HAZOP, purchasing, and construction specs. He served as a member of specialist teams to develop and review instrumentation standards according to the Manual of Engineering and Design of PDVSA. He has served as a technical instructor of standards engineering design at the International Center of Education and Development of PDVSA-CIED. He served as an IEEE Officer of the student chapter at the University of Colorado (1983). He has trained over 2000 people including engineers, technicians, and operators. <http://www.isa-emea-expo.org/speaker/argenis-garcia/>

**For your registration, please fill out the attached application form and send it to:  
[info@gprons.com](mailto:info@gprons.com)**