

# INSTRUMENTATION (INST)

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**INST 1010 – NCCER Instrument Level I 6 credit hours**

Lecture Hours: 4; Lab Hours: 6 Key content includes hand tools for instrumentation, electrical safety, power tools for instrumentation, electrical systems for instrumentation, metallurgy for instrumentation, fasteners, instrumentation drawings and documents, part one, gaskets and packing, lubricants, sealants, and cleaners, flow, pressure, level, and temperature, tubing, piping – 2" and under and hoses.

**Flat Fee:** 25

**Co-requisite(s):** CNST 1000

**Schedule type:** Web

**INST 1020 – NCCER Instrument Level II 8 credit hours**

Lecture Hours: 4; Lab Hours: 7 Key content includes Craft-Related Mathematics, Instrumentation Drawings and Documents, Part Two, Principles of Welding for Instrumentation, Process Control Theory, Detectors, Secondary Elements, Transducers, and Transmitters, Controllers, Recorders, and Indicators, Control Valves, Actuators, and Positioners, Relays and Timers, Switches and Photoelectric Devices, Filters, Regulators, and Dryers, Analyzers and Monitors, Panel-Mounted Instruments, Installing Field-Mounted Instruments and Raceways for Instrumentation.

**Flat Fee:** 25

**Pre-requisite(s):** INST 1010

**INST 1030 – NCCER Instrument Level III 8 credit hours**

Lecture Hours: 4; Lab Hours: 7 Key content includes Instrument Fitter's Math, Layout and Installation of Tubing and Piping Systems, Clean, Purge, and Test Tubing and Piping Systems, Receive, Inspect, Handle, and Store Instrumentation, Instrumentation Electrical Circuitry, Grounding and Shielding of Instrumentation Wiring, Terminating Conductors and Protective Measures for Instrumentation.

**Flat Fee:** 25

**Pre-requisite(s):** INST 1020

**Schedule type:** Web

**INST 1040 – NCCER Instrument Level IV 8 credit hours**

Lecture Hours: 4; Lab Hours: 7 Key content includes Digital Logic Circuits, Instrument Calibration and Configuration, Performing Loop Checks, Troubleshooting and Commissioning a Loop, Tuning Loops, Programmable Logic Controllers, Disturbed Control Systems and Analyzers.

**Flat Fee:** 25

**Pre-requisite(s):** INST 1030

**Schedule type:** Web