

INSTRUMENTATION (INST)

INST 1011, Electrical Sys & Equip (2 Credit Hours)

1 lecture hours per week, 1 lab hours per week, 2 contact hours per week

This course covers power generation and distribution; transmission to substations; branch circuits; motors and pumps; UPS systems; overcurrent protection devices; switch gears; motor control centers; transformers; and safety systems.

Prerequisite(s): CORE 1003*, ETRN 1112* and INST 1010*.

* May be taken concurrently.

INST 1116, Introduction to Instrumentation (6 Credit Hours)

4 lecture hours per week, 4 lab hours per week, 8 contact hours per week

Introduces students to basic safety, tools, and skills required of instrumentation technicians. Covers safety practices; hand and power tools; calculations; drawings and symbols; material handling, inspection, and storage; electrical theory and applications; fasteners; gaskets, O-rings, and packing; lubricants, sealants, and cleaners; tubing; steel piping; and hoses. Successful completion of the course requires passing all module/unit exams (with a minimum score of 70% on written exams and Pass on performance of skills).

Corequisite(s): CORE 1003

INST 1215, Fund of Instrumentation I (5 Credit Hours)

4 lecture hours per week, 3 lab hours per week, 7 contact hours per week

Builds on the Introduction to Instrumentation to initiate the next level of knowledge and skills required of instrumentation technicians. Includes temperature, pressure, level, and flow; calculations and solving commonly encountered mathematical problems; additional instruction in and applications of instrument drawings and documents; test equipment; panel-mounted instruments; and the installation of instruments in the field. Successful completion of the course requires passing all module/unit exams (with a minimum score of 70% on written exams and Pass on performance of skills).

Prerequisite(s): CORE 1003 and INST 1116.

INST 1225, Fund of Instrumentation II (5 Credit Hours)

3 lecture hours per week, 4 lab hours per week, 7 contact hours per week

Continues instruction in fundamentals critical for instrument technicians, covering raceways for instrumentation; layout, installation, and maintenance of tubing and piping systems; protective measures for instrumentation; and instrumentation air filters, regulators, and dryers. Successful completion of the course requires passing all module/unit exams (with a minimum score of 70% on written exams and Pass on performance of skills).

Prerequisite(s): INST 1215*.

* May be taken concurrently.

INST 2313, Intermediate Instrumentation I (3 Credit Hours)

2 lecture hours per week, 3 lab hours per week, 5 contact hours per week

Builds on the fundamental knowledge and skills attained in prerequisite coursework and initiates instruction in the next level of training of instrumentation technicians. Topics include control valves, actuators, and positioners; detectors, secondary elements, transducers, and transmitters; process control theory; and controllers. Successful completion of the course requires passing all module/unit exams (with a minimum score of 70% on written exams and Pass on performance of skills). This course requires lab and exam fees.

Prerequisite(s): INST 1225.

INST 2324, Intermed Instrumentation II (4 Credit Hours)

3 lecture hours per week, 2 lab hours per week, 5 contact hours per week

Completes coverage of intermediate skills required of an instrumentation technician. Covers switches and photoelectric devices; terminating conductors; grounding and shielding of instrumentation wiring; instrumentation electrical circuitry; and relays and timers. Successful completion of the course requires passing all module/unit exams with a minimum score of 70%. This course requires lab and exam fees.

Prerequisite(s): INST 2313.

INST 2414, Advanced Instrumentation I (4 Credit Hours)

3 lecture hours per week, 3 lab hours per week, 6 contact hours per week

Builds on the fundamental and intermediate instrumentation content and covers instrumentation calibration and configuration and introduces students to analyzers and monitors. Successful completion of the course requires passing all module/unit exams (with a minimum score of 70% on written exams and Pass on performance of skills).

Prerequisite(s): INST 2324.

INST 2424, Advanced Instrumentation II (4 Credit Hours)

3 lecture hours per week, 2 lab hours per week, 5 contact hours per week

Builds on the fundamental and intermediate instrumentation content and completes coverage of advanced instrumentation content. Includes proving, commissioning, and troubleshooting loops, tuning loops, digital logic circuits, programmable Logic Controllers, and distributed control systems. Successful completion of the course requires passing all module/unit exams (with a minimum score of 70% on written exams and Pass on performance of skills).

Prerequisite(s): INST 2414*.

* May be taken concurrently.

INST 2493, Industry Troubleshooting Capst (3 Credit Hours)

0 lecture hours per week, 9 lab hours per week, 9 contact hours per week

This course covers the advanced concepts of automatic process control, and process control troubleshooting will be presented, along with the concepts of proportional, integral, and derivative control modules, loop tuning, and documentation. These systems will include digital control nodes (DCNs), Open Internet Protocol Transmission/Addressing, and Industrial Internet of Things (IIoT) technologies. Utilization of human machine interface (HMI) devices with IT/OT communications. This course may not be transferable to a University for use towards a 4-year degree. This course requires a lab fee.

Prerequisite(s): (INST 1330, 1425, 2732 and 2745) or INST 2414.

INST 2635, Motor Cntrls & Var Speed Drive (3 Credit Hours)

1 lecture hours per week, 2 lab hours per week, 3 contact hours per week

This course covers concepts of motor controls, motor control circuitry, and troubleshooting and repairing/replacing motor control circuitry. Students are also introduced to the concepts of variable speed drives; frequency speed circuitry and troubleshooting as well as replacing circuitry. Students who successfully complete this course will also earn credit for NCCER Modules 12202 and 12208. Prerequisites: CORE 1003, INST 1010, 1011, ETRN 1112, 1212, 1420, INST 2820

Prerequisite(s): CORE 1003, INST 1010, 1011, ETRN 1112, 1212, 1420, INST 2820, MATH 1100, INST 1330*, 1425* and 2732*.

* May be taken concurrently.

INST 2650, Controllers/Analog Control (4 Credit Hours)

2 lecture hours per week, 2 lab hours per week, 4 contact hours per week

This course includes the principles of operation, maintenance, testing, troubleshooting and repairing/replacing of pneumatic and electronic analog process controllers and associated test equipment. The documentation and drawings will also be presented. PREREQUISITES:

INST 1110, 4.000 Credit hours 2.000 Lecture hours 2.000 Lab hours

Prerequisite(s): INST 1010.