

Instrumentation (IMIN)

IMIN 215 Programmable Logic Controllers

5 credits , REEL

Quarter(s): S, F, W, Sp

Introduces students to the fundamentals of Programmable Logic Controllers (PLCs) and their applications in industrial automation. Explores the architecture, operation, and programming of PLCs, focusing on ladder logic, function block diagrams, and sequential function charts. Develop skills to design, implement, and troubleshoot PLC-based control systems through hands-on labs and real world scenarios. Learn to configure PLCs, write and test PLC programs, and integrate them into industrial systems to control processes and machinery.

Prerequisites: None

IMIN 230 Process Technology Equipment

4 credits , REEL

Quarter(s): S, F, W, Sp

Provides an overview of the equipment and tools used in the industrial maintenance, process technology and instrumentation industries including piping, tubing, hoses and fittings, valves, pumps. Covers compressors, turbines, motors and engines, power transmission and lubrication, heat exchangers, cooling towers, furnaces and boilers, filters and dryers, vessels, and their associated instrumentation. Introduces many process related equipment concepts such as purpose, components, operation, and the Process and Maintenance Technicians roles for operating and troubleshooting equipment.

Prerequisites: None

IMIN 240 Instrumentation Fundamentals

5 credits , REEL

Quarter(s): S, F, W, Sp

Introduces students to the essential principles and components of industrial instrumentation systems. Build on the

basics of measurement and expand into calibration and control focusing on the operation of sensors, transducers, and signal processing devices. Covers key topics such as pressure, temperature, flow, and level measurement, as well as the communication protocols used in instrumentation. Gain experience in selecting, installing, and maintaining instrumentation for various industrial processes through practical application. Understand and apply the fundamentals of instrumentation in process control systems.

Prerequisites: None

IMIN 260 Advanced Instrumentation

5 credits , REEL

Quarter(s): S, F, W, Sp

Provides an in-depth study of advanced instrumentation techniques and systems used in industrial automation and process control. Explore topics such as signal conditioning, data acquisition, advanced sensors, and transducers. Covers the principles of process measurement, calibration, and instrumentation communication protocols. Develop the skills to design, implement, and troubleshoot complex instrumentation systems in various industrial environments through hands-on labs and projects. Integrate advanced instrumentation with control systems to optimize process efficiency and accuracy. Lab hours are required for this course.

Prerequisites: IMIN 240 Instrumentation Fundamentals