NITEC IN CHEMICAL PROCESS TECHNOLOGY

Core Modules

Occupational Health, Safety and Security

On completion of the module, students should be able to apply skills and knowledge in performing workplace housekeeping, responding in emergency situations and rendering first aid. They should also be able to apply skills and knowledge in workplace safety, confined space safety, safety audits, risk assessment, permit-to-work system, LOTO, and electrical safety.

Product Quality and Environment Standards

On completion of the module, students should be able to apply statistical process control, perform instrumental analysis on petroleum and pharmaceutical products, perform chromatography, spectroscopy and air-pollution control test. They also learn to conduct tests on effluent waste, perform water quality tests, carry out waste treatment facility operation and handle gas emission upsets.

Process Instrumentation and Control

On completion of the module, students should be able to perform line tracing and monitor process parameters. They also learn to carry out manual valve operation, control valve with handwheel operation, control valve by-pass operation, and perform instrument functionality check.

Process Equipment and Operation

On completion of the module, students should be able to carry out pump operation, filter operation, heat exchanger operation, reactor operation, mixer operation and ejector operation. They also learn to load and unload material, perform inter-tank transfer, change-over of process equipment and collection of raw material and sampling.

Fundamentals in cGMP

On completion of the module, students should be able to adhere to good documentation practices, carry out personal hygiene practices and sanitisation process, perform gowning procedure and handling of materials in the cleanroom. They also learn to carry out plant turnaround and changeover activities, report GMP deviations as well as perform media, buffer, reagents, solvent preparation and dispensing.

Plant Processes

On completion of the module, students should be able to carry out distillation operation, gas absorber and gas adsorber operation. They also learn to carry out extraction unit operation, evaporator operation and crystalliser operation.

Industry Attachment

The module provides opportunity for students to apply the concepts and skills acquired during institutional training in a real work environment; gain hands-on practical training pertaining to the Petrochemical, Bio-pharmaceutical and Process Instrumentation Industry.

Specialisation Modules

Biologics and Pharmaceutical Processes

On completion of the module, students should be able to perform seed and inoculum preparation activities, carry out bioreactor setup and process monitoring operation, perform CIP operation and SIP operation, monitor cell harvesting and filtration operation, perform chromatography column packing and operate large-scale chromatography and filtration equipment. They also learn to perform homogenisation and micronizing operation, carry out scrubber operation, isolator operation, phase separation, equipment cleaning operation and waste pre-treatment operation.

Equipment Maintenance and Utilities

On completion of the module, students should be able to carry out reverse osmosis water plant operation, carry out boiler unit operation, carry out steam header and condenser unit operation and carry out compressed air unit operation. They also learn to perform maintenance on pipe system and equipment, check pump and compressor performance, troubleshoot abnormal conditions in pumps and compressors, and prepare process equipment for shutdown maintenance.