

CMT - CHEMICAL TECHNOLOGY

CMT 100 Discover Fundamental chemistry (4-0-4)

This module is designed to enable learners to understand key aspects of fundamental chemistry. Learners will also develop practical skills in techniques relevant to fundamental chemistry course. The module will provide the necessary underpinning knowledge and skills to enable progression to further study of Chemical Technology and other disciplines and/or to seek employment in chemical-based industries.

CMT 101 Demonstrate knowledge of process safety fundamentals (1-2-3)

This module aims to provide learners with knowledge of safety programs, engineering ethics, accident and loss statistics, acceptable risk, public perceptions, the nature of the accident process, inherent safety, and the most significant disasters in the world.

CMT 102 Interpret process instrumentation diagrams (1-1-2)

The aim of this unit is to provide learner with knowledge to read and interpret diagrams used to document the industrial instrumentation and process control of oil and gas industry. Learners will be able to understand and describe relevant industrial standards and symbols, piping and instrumentation diagrams (P & ID); process flow diagrams; single-line diagrams, Learners will be able to draw and develop loop diagrams and other relevant to instrumentation and process control.

CMT 103 Recognise pipes and valves (1-1-2)

The aim of this course is to provide the learners with knowledge to identify and understand the operation of valves, pipelines, strainers/filters, and traps used in the process industry

CMT 104 Develop Chemical Laboratory Skills (2-1-3)

This module aims to equip chemical technology students with the necessary knowledge and skills to adopt health and safety procedures in handling laboratory tools, glassware, and conducting laboratory experiments designed for their discipline. It provides hands-on experience in conducting experiments aligned with the principles of chemical engineering and chemistry. Moreover, the module aims to enhance students' abilities to predict and explain experimental observations, interpret scientific information within the chemical engineering context and improve their scientific communication skills.

CMT 105 Operate Analytical Instruments for Sample Analysis (2-2-4)

This module covers operating a variety of specialized chemistry instruments and associated equipment, including HPLC, GC-MS, IR and UV-visible spectrophotometry. It encompasses tasks such as safely operating, maintaining and utilizing these instruments to analyze and report on chemical samples in the Chemical Engineering industry in general. Additionally, it involves applying calibration and adjustment procedures, recognizing and reporting faults in the instruments and equipment, and using knowledge of parameters for measurement, testing, and reporting.

CMT 200 Show the Operation of Heat Exchangers (1-2-3)

The objectives of this unit are to develop practical skills and knowledge in the operation, measurement, testing and control of Heat Exchangers. In addition to this, the unit helps to develop further skills in observation, evaluation, data recording, data analysis and team working.

CMT 202 Operate Physical Separation Equipment in a Production Process (2-2-4)

This module aims to provide learners with knowledge of the fundamental concepts of mass and energy balance calculations, and separation equipment used in chemical industries, such as size reduction equipment, and filtration. The concepts of flow through packed beds and fluidization are also discussed. The module provides learners with the knowledge and skills required to operate separators. Additionally, Laboratory experiments are performed to reinforce theoretical concepts.

CMT 203 Explore chemical reactors (1-2-3)

This module aims to equip learners with the knowledge and skills required to operate chemical reactors. The module covers key concepts of chemical reaction engineering such as the classification of reactions, reaction rates, reactor types, operational aspects, troubleshooting reactor operations, and reaction catalysis. The module is complemented by relevant laboratory experiments.

CMT 204 Explore Petroleum Production (1-2-3)

This module aims to provide learners with knowledge of the fundamental concepts of petroleum production including the origin, classification, treatment, and distillation of crude oil; in addition to chemical processes of refinery products and gas processing. The theoretical concepts are reinforced through corresponding laboratory experiments.

CMT 205 Manage Process Utilities (1-2-3)

This module aims to provide learners with the knowledge, skills, and competencies necessary to efficiently oversee and optimize the utilities essential to industrial processes, ensuring seamless operations and resource utilization. It also focuses on managing utilities specific to chemical processes, focusing on safety, efficiency, and sustainability within the context of industrial chemical production.

CMT 206 Use process control systems (2-2-4)

This module aims to provide learners with the knowledge and skills required to monitor and control process operations including level control, flow rate control, pressure control and temperature control. The training also includes a demonstration of the SCADA system.

CMT 207 Discover Fuels and Combustion Systems (2-2-4)

This module aims to provide learners with the knowledge and skills needed to compare various fuels and their properties, understand the physical and chemical aspects of basic combustion phenomena, determine combustion efficiency, classify flames, comprehend combustion systems and furnaces, and implement standard operating procedures. Additionally, the module provides a fundamental knowledge of renewable fuels and the related environmental issues and constraints.

CMT 208 Manage Unit Operations in the Process Industry (2-2-4)

This module aims to provide learners with the knowledge and skills required to operate columns and vessels in the process industry. The learners will be able to identify process-related issues and apply correcting measures in the field and control room.

CMT 209 Reflect on Workplace Experiences and Outcomes (0-3-3)

This module aims to create a collection of records that reflects learners' accomplishments, experiences, skills, and attributes. This module also aims to develop the skills of reflection by creating and curating learners' accomplishments, experiences, skills, and attributes.

CMT 230 Perform practical training and support in chemical, refinery and process industries (0-4-4)

This module aims to prepare learners with the necessary knowledge and abilities to apply their problem-solving skills in workplace scenarios. Learners will have the opportunity to gain practical training on the job and develop their proficiency in carrying out safe and efficient hands-on training in various disciplines related to Chemical Engineering. Additionally, learners will develop their work readiness by engaging in activities such as goal setting, analysis, and reflection, receiving feedback from employers, conducting informational interviews, and reflecting on their experiences.