

MCT - MECHANICAL TECHNOLOGY

MCT 100 Perform basic machining (4-0-4)

The aim of this unit is to develop students' knowledge and skills in a mechanical machine shop. Students will experience the mechanical processes of turning, milling, drilling, grinding and precision measurement.

MCT 101 Perform basic mechanical maintenance (4-0-4)

This unit provides the learner with the skills and knowledge to conduct routine maintenance for mechanical machines. Upon completion the course the learner will be able to recognize and undertake preventive maintenance and corrective maintenance for simple mechanical machines.

MCT 102 Discover Fluid Mechanics (0-2-2)

This unit provides the learner with skills and knowledge to understand the basics of fluid mechanics. Learners will be introduced to the fundamentals required for the understanding of flow of liquids through pipes as well as flow measuring techniques, and identification of pump types. The unit is supported by relevant laboratory experiments.

MCT 110 Interpret and Prepare Technical Drawings (2-0-3)

Provides the learner with skills and knowledge to interpret technical drawings and to prepare basic engineering drawings that conform to recognised industry standards.

MCT 111 Select instruments and sensors for measurement (3-0-3)

The aim of this unit is to develop students' knowledge of instrumentation, measurement and control in the process industry. A student who completes this course will have a basic understanding of process variables and of appropriate instruments and measuring techniques.

MCT 120 Solve problems in work and energy (5-0-5)

The objectives of the unit are to develop, understanding and skills in units, kinematics, dynamics, work and energy.

MCT 122 Analyse Static Loads (2-1-3)

This course provides the learner with a basic understanding of balanced force systems applied to rigid-bodies that are at rest. The student will apply methods to determine support reactions and relationships between internal and external forces of rigid-bodies.

MCT 123 Describe the fundamentals of material science (2-2-4)

This course aims at studying basic concepts and fundamentals of material science and engineering. Topics covered include atomic structure, arrangements, and unit cells, types of engineering materials, testing, and mechanical properties. Details mechanism of corrosion and the possibility to take measures to prevent them will also be discussed

MCT 124 Explore heat transfer and thermodynamics (2-2-4)

This unit provides the learner with an understanding of the basics of heat transfer and thermodynamics, including thermodynamic properties and states, ideal gas law, 1st Law of thermodynamics, conservation of mass, conservation of energy, conduction, convection, thermal radiation and heat transfer rate laws. The unit is supported by the relevant laboratory experiments.

MCT 125 Perform CAD CAM (2-2-4)

This unit aims to introduce students to the fundamentals of Computer Aided Design / Computer Aided Manufacture which includes geometric modeling, material removal processes, product design, CAD/CAM applications, CNC Programming, rapid prototyping & coordinate measuring machines.

MCT 200 Interpret and document technical information (2-0-2)

This course is designed to provide students with the understanding and competencies to research, collate, analyze, interpret, and report technical and engineering information. The students will learn how to identify and evaluate technical instruction documents and recognize the main features of technical proposals. They will gain the knowledge of how to read, and evaluate business emails or letters containing technical information, interpret technical specifications, and evaluate technical reports.

MCT 201 Apply engineering technology to real or simulated situations to produce technical solutions (1-3-4)

This unit aims to provide learners with the knowledge and skills to develop students' ability to apply basic scientific principles and techniques to clearly define engineering technology problems. Prepare and plan to undertake research. Undertake literature review, analyze/ evaluate the data and information, produce findings and report (possibly a simulation/basic prototype), and present report of findings to peer group, senior expert and supervisor.

MCT 210 Prepare CAD environment, create 2D-3D drawings and understand manufacturing automation (2-2-4)

To provide learners with the knowledge and skills to do computer-aided design and computer-aided manufacturing.

MCT 211 Explore knowledge and skills of pumps and compressors (2-0-2)

The aim of this unit is to provide learners with the knowledge and skills to develop their practical skills by learning while doing and provide hands-on training for single stage air compressor "reciprocating or positive displacement compressor" and pumps. In addition to this, to develop learner's skills such as observation, operation, measurement, testing, evaluating the piston air compressor performance, recording data, data analysis and controlling industrial compressors and pumps.

MCT 212 Explore the basics of pneumatic and hydraulic Systems (2-2-4)

This unit aims to provide learners with the knowledge and skills of operation of Basic Pneumatic and Hydraulic Systems, troubleshooting techniques and systems' applications.

MCT 213 Operate and Maintain Computer Numerical Control (CNC) machines (0-2-2)

The "Operate and Maintain CNC Machines" course is designed to provide students with the knowledge and practical skills required to operate and maintain Computer Numerical Control (CNC) machines effectively. CNC machines play a crucial role in modern manufacturing, and this course aims to equip individuals with the expertise needed to work with these precision machines safely and efficiently.

MCT 214 Explore 3D printing technologies in engineering (0-2-2)

This course aims to provide learners with the knowledge and skills to be able to create, edit and recognize types of 3D printing process and its software. At the end of this unit, learners will be able to: -Create & edit 3D models with respect to the requirements of 3D printer & material. -Explore types of 3D printing processes & their applications & advantages -Analyze the hardware parts & troubleshoot problems of 3D printers & materials -Create and edit files using 3D printing software & generate g-codes to printable format

MCT 216 Develop knowledge of work organization and management (2-0-2)

The aim of this unit is to develop the skills and knowledge required to understand the dynamic of an organization, support the manager to deliver the solutions that match the client's expectations at the same time abiding by socio-economic and political constraints. It applies to individuals who seek to work for an organization that has chain of command and is business with the clients who are not necessarily from the same socio-culture

MCT 220 Produce CAD technical drawings (2-0-2)

The learner will at the end of the unit be able to produce 2D technical drawings, 3D CAD models and customize a CAD system working environment to meet drawing needs.

MCT 221 Explore the knowledge and skills of codes and standards in mechanical engineering (2-0-2)

This course aims to enable the students to read and implement the codes and standards in dimensioning and tolerancing in technical drawing, which include: thread and end connection, refrigeration piping and heat transfer, and dimensional metrology.

MCT 222 Explore the fundamentals of mechatronic electromechanical drives (2-2-4)

Basics knowledge of physics and math

MCT 230 Perform practical training and support in electromechanical based industries (0-10-10)

The aim of this unit is to allow student to participate in an internship program that allows student to gain an on job training. It provides learners with the practical knowledge and skills to develop students' ability to show understanding and knowledge to solve problems in the real world situation. It aims to assess trainee's competence in completing safe and effective on-site hands-on training in disciplines related to Electromechanical Engineering.