G01: DIPLOMA IN PRODUCTION TECHNOLOGY (TOOL & DIE TECHNOLOGY)

Course Brief

Tool & Die Technology is a three-year diploma program that focuses on aspects of metal stamping process and machine tools. It concentrates on modern fabrication activities such as conventional and Computer Numerical Control (CNC) machining, tool design and construction with Computer Aided Design and machining (CADCAM), metrology, materials and final year projects. The first year is the foundation year where students are exposed to fundamental training, machining, blueprint reading, and material science and metrology. In the second and third years, advanced theory and practical in stamping, die design and development, die maintenance and quality control are taught as their specialization. Students will also carry out Final Year project similar to industrial project to enhance the knowledge and skills gained.

Nature Of Work

Prospective graduates will handle various machine tools, fabricate and troubleshoot dies, operate specialized machines, tools, jigs and fixtures. In the Tool & Die field, computer-assisted machining and die design using CAD suites are also important elements. Other than design and machining tasks, graduates need to be familiar with machining properties, such as material hardness, cutting tools and a wide variety of metals and alloys. Graduates have to ensure that parts produced from mass production must be acceptable within dimensional tolerances and appearance using precision measuring instruments, gauges and Coordinate Measuring Machine (CMM). Overall, the demanding responsibilities in Tool & Die technology areas provide job satisfaction and are well rewarded in the manufacturing sector.

G02: DIPLOMA IN PRODUCTION TECHNOLOGY (MOULD TECHNOLOGY)

Course Brief

The Mould Technology course is a three-year diploma program that focuses on aspects of plastic injection process and machine tools. It concentrates on modern fabrication activities such as conventional and CNC machining, mould design and construction with versatile CAD suites and Computer Aided Machining (CAM) for programming and CNC machining, metrology, materials and final year projects. The first year is the foundation year where students are exposed to fundamental training, machining, blueprint reading, material science and metrology. In the second and third years, advanced theory and practical in polymers, plastic injection moulds construction and design, material flow simulation for optimization of plastic component design, machine operation, mould maintenance and quality control are taught as their specialization. Students will also carry out Final Year project similar to industrial project to enhance the knowledge and skills gained.

Nature Of Work

Prospective graduates will handle various machine tools, fabricate and troubleshoot dies, operate specialized machines, tools, jigs and fixtures. In the plastic injection environment, computer-assisted machining and mould design using CAD suites are very important elements to produce complex and highly finished machined surfaces. Other than design and machining tasks, graduates also need to be familiar with machining properties, such as material hardness, cutting tools and a wide variety of metals and alloys suitable for mould inserts and cavities. Graduates have to ensure that parts produced from mass production must be acceptable within dimensional tolerances and appearance using precision measuring instruments, gauges and Coordinate Measuring Machine (CMM). Responsibilities of Mould Technology graduates are well compensated in the industry.
G03: DIPLOMA IN INDUSTRIAL ELECTRONICS (ELECTRONICS & INFORMATION TECHNOLOGY)

Course Brief

Electronics & Information Technology is a three-year diploma program which provides a broad-based technical competency and interpersonal skills needed in modern IT besides preparing the students to face the rapid changes of the new technology. It has been uniquely designed by incorporating both IT and electronic engineering elements. For the first three semesters, the students will learn the principles and practical aspects of electrical and electronics including analog and digital, computer programming, sensor, control systems and PLC. In semester 4, 5 and 6, the students will acquire more in-depth knowledge and practical application of microprocessor, interface design, microcontroller systems, local area network, RF, wired and wireless telephony, telecommunication systems, data communication systems and network administration and maintenance. In addition to that, the program also integrates communicative and thinking skills, project management, entrepreneurship and personal learning.

Nature Of Work

Prospective graduates can contribute in various fields within the electronics industry, such as hardware and software design and development, maintenance, production, marketing, quality assurance and technical support of any electronic application, telecommunication and computer network. Among the responsibilities are:
- Developing program and carrying out installation and testing using micro controller and micro computer to control electrical electronics devices
- Maintaining and repairing systems involved in the integration of electrical, electronics, computer and the network in the manufacturing industry
- Monitoring the manufacturing and the production process involving the use of computer, microcontroller, microcomputer and its applications
- Designing, installing, setting up, maintaining and managing the computer network and its systems

G04: DIPLOMA IN INDUSTRIAL ELECTRONICS (MECHATRONICS)

Course Brief

Mechatronics is a three-year diploma program focuses on the synergistic integration of physical system with information technology and complex decision making in the design, manufacture and operation of industrial products and processes. This program with the practical oriented approach provides solid foundation of the elements used. The integration of the physical elements namely electrical electronics and mechanical with information technology such as programming and networking offers an exciting experience exploring the course.

The first three semesters cover the foundation training in electrical, electronics, computer applications, CAD, and even machining. These knowledge and skills progress to the next three semesters where the major elements in Mechatronics such as PLC, sensors, controls, automation, machine assembly, robotics and computer integrated manufacturing (CIM) are introduced to the students.

Nature Of Work

Prospective graduates will have the knowledge and skills in the installation, commission and maintenance of any automation or mechatronics system in most manufacturing sectors such as semiconductors, electronics and automobiles. They are also capable in supporting the development and engineering of those systems. Among the responsibilities are:
- simulating the mechanical motion, the automation system operation or industrial robot operation using simulation software wiring the electrical supply to the main controller, input devices and output devices in an automation system installing the pneumatics or hydraulics components such as valves and cylinder into an automation system reading, modifying and developing the PLC ladder diagram
- operating an industrial robot
**G05: DIPLOMA IN INDUSTRIAL ELECTRONICS (PROCESS INSTRUMENTATION & CONTROL)**

**Course Brief**

Process Instrumentation & Control is a three-year diploma program that provides holistic skills and understanding in complex hybrid systems that are widely used in the industries. These modern systems integrate the electrical equipment, mechanical elements, instrumentation and computers using the latest industrial communication protocols to monitor and control the processes.

This course covers solid fundamentals training in the first three semesters in the area of electrical electronics, mechanical and computer. Semester 4, 5 and 6 enable the students to learn the process control strategy, process instrumentations, PLC, pneumatics, electrical motors, calibration sensor tuning and actuators and also the SCADA/DCS technology. Basic communication, programing, power electronics and drive technology are also offered to the students in molding them to be more adaptable to changes in the process automation working environment. These can also be treated as foundation knowledge towards higher education.

The hands-on training offered in this program combining practical problem solving with the theory application allows the trainees to be more creative especially during the final year project. They will get the chance to apply modern measurement techniques, open control system architectures and robust feedback strategies.

**Nature Of Work**

Prospective graduates will have the knowledge and skills in repairing, maintaining, calibrating, adjusting and installing industrial measuring and controlling instrumentation. They can be employed by pulp and paper processing companies, petrochemical and natural gas companies, and other manufacturing companies and industrial instrument servicing establishments. Among the responsibilities are:

- Determining tests and maintaining procedures for instruments used in measuring and controlling flow, level, pressure, temperature and other manufacturing and processing variables
- Diagnosing system faults, overhauling and calibrating instrument and control devices
- Performing preventive maintenance work and calibration to ensure accuracy of plant instrumentation
- Repairing and programing PLCs and other equipment used with DCS/SCADA
- Working with vendors, manufacturers, consultants and co-workers when necessary to achieve desired results and maintaining the process plant

**G06: DIPLOMA IN NETWORK SECURITY**

**Course Brief**

Network Security is a three-year diploma program that concentrates on the secure communication among computers in the network. This program offers students to experience working with advanced and the latest software and hi-tech hardware in designing, protecting and evaluating the security of the network.

The first year is the foundation year where students are introduced to the basic understanding of the computer network. Throughout the second year, they are then exposed to the techniques and skills on designing and developing a secure network architecture with the integration of secure programing practice. Evaluating and testing activities on the developed network and software are carried out later in the final year.

The program also integrates information security ethics, communicative and thinking skills, project management, entrepreneurship, and personal learning.

**Nature Of Work**

Prospective graduates can contribute in planning, designing, assembling, managing and protecting the computer networks from hackers or crackers. Among the responsibilities are:

- Planning and designing the computer network by enforcing the security of the data
- Assembling and troubleshooting the network devices such as switch and router
- Monitoring the data that can be used as evidence in the event of crime occurs
- Capturing and analyzing any hacking/cracking activities in the network
GO7: DIPLOMA IN PRODUCT DESIGN & MANUFACTURING

Course Brief

Product Design & Manufacturing is a three-year diploma program that focuses on product design concepts, presentation of new product ideas and advanced manufacturing applications for production. Intensive exposure on material science, basic machining processes, computer aided design and product design fundamentals during the first year will enable students to have a strong technical foundation. In the following two years of training, areas of specialization in the program will be facilitated by a wide range of technology disciplines namely rapid prototyping, ergonomics and design, product design for manufacture, and advanced manufacturing. Students are required to propose and produce new and innovative product design that conform to industrial standards or practices during their final year project.

Nature Of Work

Prospective graduates shall employ a range of creative design and craft, engineering skills and processes, to design and shape products for a variety of applications. Combining and balancing innovative engineering design, functional requirements and aesthetic appeal, products are usually either for mass or small quantity production. They commonly fall into the areas of industrial, commercial and domestic products or appliances. The tasks involve designing, modeling, testing and producing prototypes for brand new products or improvising existing products. The role in product design and manufacturing demands in-depth knowledge and understanding of materials, analysis and testing approaches, production processes and commercial awareness.

GO8: DIPLOMA IN CNC PRECISION

Course Brief

CNC Precision Technology is a three-year diploma program that focuses on CNC technology with emphasis on precision machining. This program offers students to experience working with modern machine tools and equipment in order to guarantee high quality product. The first year of training will expose students to basic cutting process, conventional machining such as milling, turning and grinding, and up to 3 Axis CADCAM and 3 Axis CNC Machining. In the specialization areas, students will master the high end application of 4 Axis CNC and 5 Axis CNC technologies, CADCAM, and employ jigs and fixtures designed for automating CNC operations. A strong grasps in material science, cutting tools, manufacturing process and machine maintenance shall equip students to be competent in every area of precision machining. In the Final Year Project, students are challenged to apply knowledge and skills gained into practice with projects that are similar to industrial applications.

Nature Of Work

Prospective graduates will analyze blueprints and identify the appropriate manufacturing process for production of parts. The trainees will be involved in determining and performing procedures for programming, preparation of parts and tooling and machine setup. The prospective graduates will operate and maintain CNC machine tools to produce precision parts in compliance with safety practices, and verify the output with the proper quality assurance methods. Besides the core functions, they must be able to plan, monitor and control the production activities with relevant planning tools. Communication is vital for prospects as all tasks will require contact and information delivery to customers, subordinates, management and suppliers.