Bachelor of Electrical Engineering Technology (Hons)
(Robotic & Automation Technology)

Program Education Objective (PEO)

Programme Objective 1
Graduates are leaders in the field of electrical engineering as demonstrated through career advancement.

Programme Objective 2
Graduates who are members and contribute to professional society.

Programme Objective 3
Graduates pursue continuing education opportunities.

Programme Objective 4
Graduates make contributions through research and development.

Programme Objective 5
Graduates who are entrepreneurs.

Programme Outcomes (PO)

PO1
Apply knowledge of mathematics, science, engineering fundamentals and engineering specialisation principles to defined and applied engineering procedures, processes, systems or methodologies;

PO2
Solve broadly-defined engineering problems systematically to reach substantiated conclusions, using tools and techniques appropriate to their discipline or area of specialisation

PO3
Design solutions for broadly-defined engineering technology problems, and to design systems, components or processes to meet specified needs with appropriate consideration for public health and safety, as well as cultural, societal, environmental and sustainability concerns

PO4
Plan and conduct experimental investigations of broadly-defined problems, using data from relevant sources

PO5
Select and apply appropriate techniques, resources and modern engineering tools, with an understanding of their limitations

PO6
Function effectively as individuals, and as members or leaders in diverse technical teams

**PO7**
Communicate effectively with the engineering community and society at large

**PO8**
Demonstrate an awareness of and consideration for societal, health, safety, legal and cultural issues and their consequent responsibilities

**PO9**
Demonstrate an understanding of professional ethics, responsibilities and norms of engineering technology practices

**PO10**
Demonstrate an awareness of management, business practices and entrepreneurship

**PO11**
Demonstrate an understanding of the impact of engineering practices, taking into account the need for sustainable development

**PO12**
Recognise the need for professional development and to engage in independent and lifelong learning
## Curriculum Structure for BACHELOR OF ELECTRICAL ENGINEERING TECHNOLOGY (Hons) (ROBOTICS & AUTOMATION TECHNOLOGY)

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<td>Measurement &amp; Instrumentation</td>
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<td>Computer Aided Drafting (CAD)</td>
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<td>Principles of Thermo fluid and Materials</td>
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<td>University Malay Language</td>
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### Total Units for Graduation 145

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Note: Foundation English - Band 1 & 2; EGP - Band 1, 2 & 3; ETC - Band 1, 2, 3 & 4; Option subject - Band 4
LIST OF COURSES FOR BACHELOR OF ELECTRICAL ENGINEERING TECHNOLOGY (HONS) (ROBOTIC & AUTOMATION TECHNOLOGY):

PLT102/2
COMPUTER AIDED DRAFTING (CAD)

PLT104/3
ENGINEERING SCIENCE

PLT105/3
ELECTRIC CIRCUIT THEORY 1

PLT106/3
DIGITAL ELECTRONICS

PLT107/3
ELECTRONICS 1

PLT108/3
ENGINEERING SKILLS II

PLT121/3
ELECTRICAL TECHNOLOGY

PLT202/3
MEASUREMENT & INSTRUMENTATION

PLT206/3
MICROPROCESSOR SYSTEM & MICROCONTROLLER

PLT209/3
SIGNAL & SYSTEMS

PLT221/3
PRINCIPLES OF THERMO FLUID AND MATERIALS

PLT222/3
APPLIED MECHANICS

PLT 223/3
MACHINE DESIGN

PLT224/3
PNEUMATICS AND HYDRAULIC SYSTEM

PLT303/3
ELECTRICAL DRIVES

PLT305/3
CONTROL SYSTEM TECHNOLOGY

PLT307/3
PROGRAMMABLE LOGIC CONTROLLER (PLC)
PLT321/3
INDUSTRIAL NETWORKING

PLT322/3
INDUSTRIAL PROCESS CONTROL
(Pre Requisite: PLT 305/3 Control System Technology)

PLT323/3
INTRODUCTION TO ROBOTICS

PLT324/3
MANUFACTURING PROCESS

PLT325/3
MANUFACTURING SUPPORT SYSTEM

PLT326/3
INDUSTRIAL AUTOMATION

PLT327/3
INDUSTRIAL ROBOTICS

PLT 328/3
ROBOTIC CONTROL
(ELECTIVE A1)

PLT 329/3
ADVANCED CONTROL SYSTEM
(ELECTIVE A2)

PLT340/4
FINAL YEAR PROJECT I

PLT421/3
INDUSTRIAL MANAGEMENT AND QUALITY

PLT422/3
MECHATRONIC SYSTEMS

PLT 423/3
MATERIAL HANDLING AND IDENTIFICATION
(ELECTIVE B1)

PLT 424/3
AUTOMATED GUIDED VEHICLE
(ELECTIVE B2)

PLT440/6
FINAL YEAR PROJECT II
COURSE SYLLABUS:

PLT102/2
COMPUTER AIDED DRAFTING (CAD)

Course synopsis
This is a core subject. It will expose the students to understand the concepts of Computer Aided Drafting. Student also would able to illustrate engineering drawing, 2D & 3D modelling and construct a product drawing.

Course Outcomes

CO1:
Ability to apply fundamental concepts of Computer Aided Drafting.

CO2:
Ability to illustrate engineering drawing by using proper techniques.

CO3:
Ability to use of Computer Aided Drafting to construct a simple product drawing.

CO4:
Ability to perform in groups to illustrate 2D and 3D modeling.

References

PLT104/3
ENGINEERING SCIENCE

Course synopsis
This course aims to introduce to the Electrical Engineering students the knowledge on the principles of material engineering and thermal fluid. It includes aspects related to material engineering, thermodynamics and fluid mechanics.

Course Outcomes

CO1:
Ability to describe and analyze the Mechanical, Electrical and Magnetic properties of materials.

CO2:
Ability to understand, apply and analyze concepts and principles of Fluid Statics, Bernoulli and Energy Equations.

CO3:
Ability to understand, apply and analyze concepts and principles of First Law and Second Law of Thermodynamics.
CO4:
Ability to work in team and communicate effectively.

References

PLT105/3
ELECTRIC CIRCUIT THEORY 1

Course synopsis
This course covers topics of introduction to the DC circuit’s covers fundamental laws and theorems. Students also get knowledge about AC circuits that introduces phasors and sinusoidal steady state analysis. This course intends to give the students knowledge on understanding three-phase balance systems.

Course Outcomes

CO1:
Ability to derive important equations to solve problems in DC circuits.

CO2:
Ability to analyze the first and second order circuits containing passive elements, DC sources and switches using differential equations.

CO3:
Ability to calculate circuit parameters containing sinusoidal steady-state sources using complex impedances and phasor representations.

References

PLT106/3
DIGITAL ELECTRONICS

Course synopsis
Basically this introductory circuit course can be divided into two parts. Part I, consisting of chapter 1 through 4, is devoted to DC circuits. It covers fundamental laws and theorems, circuit analytical techniques, passive and active elements. Part 2, consisting of chapter 5 through 7, deals with AC circuits. It introduces phasors, sinusoidal steady state analysis, using previous analytical techniques.
under sinusoidal steady state excitation, RLC circuits, AC power calculations and power factor correction and rms values.

The aim of this course is to introduce students to the basic knowledge in the digital electronics. The lectures and laboratories cover the following topics: Numbering System, Algebraic Switching, Boolean Function, Combinational Logic and Sequential Logic Circuit.

Course Outcomes

CO1:  
Ability to explain and use the basic principles of numbering system and basic theory of binary system in digital electronics

CO2:  
Ability to design and optimizes logic circuit using Boolean functions and Karnaugh maps

CO3:  
Ability to design digital system applications using combinational and sequential logic design techniques.

References

PLT107/3
ELECTRONICS 1

Course synopsis
This subject will expose the students with basic electronic devices. It provides a depth study on the concept of PN junction, operation and characteristics of the diode. The students will be emphasized to Half wave rectifiers, Full wave rectifiers, Power Supply Filter and Regulators, Clipper and Clamper Diode circuits and Voltage Multipliers. The students also will learn about the special purpose of zener diode in terms of its characteristics and applications. Bipolar Junction Transistors (BJTs) and various types of Field-Effect Transistor which are Junction Field-Effect Transistor (JFET) and the Metal Oxide Semiconductor Field-Effect Transistor (MOSFET) will be introduced in this course as well. Basic theories, principles and practical are stressed in this course.

Course Outcomes

CO1:
Ability to explain and differentiate the fundamental concepts of electronic devices.

CO2:
Ability to analyze the basic operations of electronic devices such as diode, BJT and various types of FET.

CO3:
Ability to calculate and analyze the basic biasing circuits using datasheet.

References

PLT108/3
ENGINEERING SKILLS II

Course synopsis
This is the core subject which is 100% practical and carried out 3 units credit hours. This course contains modules to provide students with engineering skills such as Printed Circuit Board (PCB) fabrication and design module and electrical domestic wiring.

Course Outcomes

CO1:
Ability to use OrCAD software to construct PCB circuit board.

CO2:
Ability to apply and construct the basic skills and standard practiced of PCB layout design and fabrication process.
CO3:
Ability to apply and construct the basic skills and standard practiced of domestic wiring.

References

PLT121/3
ELECTRICAL TECHNOLOGY

Course Synopsis
The objective of the course is to introduce the students with the fundamentals concept of electric circuits, electric supply system and installation, magnetic and electromagnetic, inductance, capacitance and AC circuit, three-phase system, basic principles of electrical machines, DC and AC electrical machines, transformer and electrical safety. The laboratory will be used to aid the students understanding of the concept introduced.

Course Outcomes
CO1:
Ability to analyze electrical circuits to solve engineering problems.

CO2:
Ability to analyze the characteristics three-phase circuits and electromagnetic.

CO3:
Ability to analyze the operation of Electrical Machines and their applications.

References

PLT202/3
MEASUREMENT & INSTRUMENTATION

Course Synopsis
This course covers topics of introduction to the basic concepts of measurement methods and instrumentation. This course intends to give the students knowledge on measuring devices, bridge methods and transducers.

**Course Outcomes**

**CO1:**
Ability to define, describe and analyze the elements of a complete electronic instrumentation and measurement system.

**CO2:**
Ability to explain and apply the working principles of various sensors and signal conditioning/processing techniques in instrumentation and measurements.

**CO3:**
Ability to describe and analyze display systems, data acquisition systems and computer interfacing techniques in instrumentation and measurements.

**References**


**PLT206/3**
**MICROPROCESSOR SYSTEM & MICROCONTROLLER**

**Course Synopsis**

The aims of this course is to study the PIC 18 microcontroller architecture, its programming language (assembly and C) and basic interfacing with input and output devices. These knowledge are gathered and applied to design a simple microcontroller based system.

**Course Outcomes**

**CO1:**
Ability to explain the basic microcontroller architecture.

**CO2:**
Ability to analyze and write a microcontroller programming language in assembly and C program.

**CO3:**
Ability to interface the input and output devices with microcontroller.

**CO4:**
Ability to design a simple microcontroller based system and present in group.
References


PLT209/3
SIGNAL & SYSTEMS

Course Synopsis

This course aims to introduce students the basic of signals and systems. To learn how certain input to a system will produce the required output. To understand signal spectrum concept and the method being utilized to analyze signal and its relations.

Course Outcomes

CO1:
Ability to identify type and analyze waveform of the signals and its characteristic in engineering systems.

CO2:
Ability to analyze signals and determine the process of the systems.

CO3:
Ability to explain and calculate the system response using variable methods.

CO4:
Ability to prepare a report in relevant topics using various resources.

References


PLT221/3
PRINCIPLES OF THERMO FLUID AND MATERIALS

Course Synopsis
This course aims to introduce to the mechatronic engineering students the basic knowledge on the principles of mechanical sciences. It includes basic aspects related to material engineering, fluid mechanics and Thermodynamics.

**Course Outcomes**

CO1:
Ability to describe the Mechanical properties of materials and analyse tensile, compressive, shear stresses & strains, and torsional deformation.

CO2:
Ability to calculate the pressure variation in a static fluid, and to analyze the resulting hydrostatic forces on plane and curved submerged surfaces.

CO3:
Ability to describe, explain and analyze an Energy equation for fluid flow problems.

CO4:
Ability to identify, analyze and solve energy balance problems for closed and steady flow systems and devices.

**References**

**PLT222/3**
**APPLIED MECHANICS**

**Course Synopsis**

This course covers vector representation of forces, moments and couples of static equilibrium of particles, rigid body and engineering structures, together with analysis of external and internal forces in structure via the methods of free body diagram and properties of cross-sectional areas. The course also elaborates on kinematics and kinetics of system of particles and a rigid bodies in two and three-dimensional spaces covering force and acceleration, linear and angular momentum and energy conservation.

**Course Outcomes**

CO1:
Ability to apply the basic principles of statics and dynamics on mechanism and bodies.

CO2:
Ability to analyse systems/problems related to forces, loads, displacement for bodies at rest.
CO3:
Ability to analyse systems/problems related to forces, loads, displacement for bodies in motion.

References

PLT 223/3
MACHINE DESIGN

Course Synopsis
This course enables the students to comprehend and identify theoretical design as well as the machine elements that need to be considered in machine design process. This course also encourages the students to think as a machine designer. The concept and principle of machine design taught will be applied in designing machine, focusing on the outcome of innovative student thinking.

Course Outcomes

CO1:
Ability to discuss, applies, and organizes the concept and principle of design process.

CO2:
Ability to discuss, apply, and organize machine elements and analyze position, velocity and acceleration of a point in a linkage.

CO3:
Ability to analyze, and construct machine elements to develop a mechanism.

CO4:
Ability to apply, analyze and sketch mechanism design (linkage synthesis).

References

PLT224/3
PNEUMATICS AND HYDRAULIC SYSTEM

Course synopsis

This course discusses basic pneumatics, sensors, electro-pneumatics and hydraulics technologies that are related to industrial application. Students will study the construction and design of circuit by eans of example and exercises.

Course Outcomes

CO1: Ability to differentiate and explain type of hydraulics and pneumatics motor, drive and sensors and drive requirements.

CO2: Ability to justify and analyze power of hydraulics and pneumatics drives parameters based on load characteristics.

CO3: Ability to explain and calculate converters parameters for hydraulics and pneumatics drives.

References


PLT303/3

ELECTRICAL DRIVES

Course synopsis

This course provides the student an exposure application of Power Electronics for electric motor drives. It emphasize on fundamental concepts of power electronic drives, electrical machines types and related applications. The aspects of load characteristic and matching drives to load also discussed.

Course Outcomes

CO1: Ability to differentiate and explain type of motor loads and drive requirements.

CO2: Ability to justify and analyze power electronic drives parameters based on load characteristics.

CO3: Ability to explain and calculate converters parameters for power electronic drives.

CO4: Ability to design and recommend appropriate power electronic drives parameters in electrical machines application.

References
PLT305/3
CONTROL SYSTEM TECHNOLOGY

Course synopsis

This course is an introduction to control systems theory involving different areas of applications, comprises of three major parts: Part I - Control Systems Representations - representation of physical systems by differential equation, transfer function, state-space modeling, block diagram techniques and signal flow graph. Part II – Control Systems Performance Analysis - analysis of systems in terms of transient response, stability and steady-state errors. Root locus and frequency response techniques are used for higher order systems. Part III – Control Systems Design - design of controllers and compensators for systems via root locus and frequency response.

Course Outcomes

CO1: Ability to obtain the mathematical model for electrical and mechanical systems.

CO2: Ability to analyze system’s time-domain with response to test inputs. Analysis includes the determination of the system stability.

CO3: Ability to analyze system’s frequency-domain with response to test inputs. Analysis includes the determination of the system stability.

CO4: Ability to design PID, lead and lag controllers based on the analysis of the system’s response.

References

PLT307/3
PROGRAMMABLE LOGIC CONTROLLER (PLC)

Course Synopsis

The student will be expose to programmable logic controller (PLC), PLC components, PLC programming and operational procedure. PLC capable to perform more complex motion and process control applications.

Course Outcomes

CO1: Ability to explain ladder diagram that will perform a specified operation using PLC programming.

CO2: Ability to design a specified operation using PLC programming in applications of industrial electronic control.

References


PLT321/3
INDUSTRIAL NETWORKING

Course Synopsis

This subject will cover all the basic principles and concepts of communication system including the basic elements of communications, signal analysis, amplitude modulation, angle modulations and digital modulations, as well as transmission channels and medium. In addition, introductions to signal propagations and calculations of signal to noise ratio are also introduced to relate the students with real world applications.

Course Outcomes

CO1: Ability to explain the principle of network and communication systems.

CO2: Ability to obtain mathematical model of modulation.

CO3: Ability to apply principle of various types of network and communication systems.

CO4: Ability to select equipments for the industrial network and communication technology.

References


PLT322/3
INDUSTRIAL PROCESS CONTROL
(Pre Requisite: PLT 305/3 Control System Technology)

Course Synopsis

This course aims to convey the knowledge of classical control systems, advanced classical control method, state space representation of continuous-time system, continuous-time response and performance, specifications, state space analysis and design, advanced state space control system, projects based on problems drawn from mechatronics and manufacturing.

Course Outcomes

CO1: Ability to analyze the concepts of state-space design, non-linear system and digital control.

CO2: Ability to apply the concept of controllability and observability.

CO3: Ability to analyze the non linear system.

CO4: Ability to design the digital control.

References

PLT323/3
INTRODUCTION TO ROBOTICS

Course Synopsis

This course is designed to introduce various aspects of Robotics such as the Types of robots, Capabilities, Characteristics, Robot Control Systems and Software, Kinematic Analysis, Principles of Inverse Kinematics, Robot Sensors and Drive mechanisms, Robot Work Dell design and Various industrial Applications.

Course Outcomes

CO1:
Ability to describe the importance of various types of robots and relate them in various industrial applications.

CO2:
Ability to construct and analyze the coordinate representation, transformations and path planning.

CO3:
Ability to construct and analyze robot control systems for various industrial applications.

CO4:
Ability to design a robot work-cell for specific industrial task and measure its validity.

References

PLT324/3
MANUFACTURING PROCESS

Course Synopsis
This course is an introduction of manufacturing processes and techniques used in industry to convert raw materials into finished or semi-finished part. This includes the study on the characteristics of manufacturing processes such as forming, casting, moulding, rapid prototyping, non-conventional machining and welding, soldering and mechanical fasteners. The influence of materials and processing parameters in understanding individual processes are also highlighted.

Course Outcome

CO1:
Ability to describe and choose the right raw materials for selected manufacturing processes.

CO2:
Ability to describe, display and analyze the manufacturing processes for a finished product.

CO3:
Ability to choose, compare and evaluate the use of proper machine to complete a particular manufacturing process.

References
PLT325/3
MANUFACTURING SUPPORT SYSTEM

Course Synopsis

This course offers comprehensive contents about production and operation management in manufacturing and services. Production and operation management is the process of managing people and resources in order to create a product or a service. This course also introduces students to project management, forecasting theory, goods and services design, process strategy and capacity planning, location and layout strategies, supply chain management, inventory management theory, aggregate planning theory, Material Requirements Planning (MRP) and scheduling theory.

Course Outcome

CO1: Ability to analyze operations management in operations, productivity, project management and forecasting.

CO2: Ability to design operations in goods and services, process control, capacity planning, location and layout strategies.

CO3: Ability to manage operations in supply-chain management, inventory management, aggregate planning, material requirements planning, operations scheduling, maintenance and reliability.

References


PLT326/3
INDUSTRIAL AUTOMATION

Course Synopsis

This course aims to convey the knowledge of automation technologies. It combines the automation technology principles and its relationship with assembly process and system, the element of sensor, actuator and drive technology as an input/output component in automation technology. It also covers automation technology and technique in terms of hardware and software control, the automation technology issues in design, engineering analysis, planning, tooling and manufacturing.

Course Outcomes
CO1: Ability to perform analyzes on automation in a production system.

CO2: Ability to perform analyzes and evaluate on elements of an automation system.

CO3: Ability to design and evaluate the automation system for an optimum performance in various applications.

References

PLT327/3
INDUSTRIAL ROBOTICS

Course Synopsis
This Course is designed to introduce various aspects of Robotics such as the types of robots, capabilities, characteristics, Robot Control Systems and Software, Kinematic Analysis, Principles of Inverse Kinematics, Robot Sensors and Drive mechanisms, Robot Work Cell design and Various industrial Applications.

Course Outcomes
CO1: Ability to describe the importance of various types of robots and relate them in various industrial applications.

CO2: Ability to construct and analyze the coordinate representation, transformations and path planning.

CO3: Ability to construct and analyze robot control systems for various industrial applications.

CO4: Ability to design a robot work-cell for specific industrial task and measure its validity.

References

PLT 328/3
ROBOTIC CONTROL
(ELECTIVE A1)

Course Synopsis

The objective of this course is to impart knowledge in the application and design aspect of mechatronic system. The course topics include the applications of sensors and transducers, signal conditioning, pneumatic, hydraulic, mechanical and electrical actuators, input and output interfacing, communication systems, programmable logic controllers, microprocessors and fault analysis.

Course Outcomes

CO1: Ability to design, develop and construct industrial measurement and instrumentation systems.

CO2: Ability to design and develop industrial actuation systems.

CO3: Ability to evaluate, design and construct analog and digital control system using PLC and Microcontroller.

CO4: Ability to design, construct and evaluate simple mechatronic systems that combine electrical/electronic and mechanical components.

References


PLT 329/3
ADVANCED CONTROL SYSTEM
(ELECTIVE A2)

Course Synopsis

The aim of this course is to introduce state-space design, non-linear system and digital control. Students also will be exposed to other control methods, like robust control, predictive control and optimal control.

Course Outcomes

CO1: Ability to analyze the concepts of state-space design, non-linear system and digital control
CO2: Ability to derive state-space description from continuous-time and discrete-time systems.

CO3: Ability to design state-feedback and digital controller.

CO4: Ability to evaluate Robust Control, Optimal Control methods.

References

PLT340/4
FINAL YEAR PROJECT I

Course synopsis
Small-scaled research project that inclined towards designing is necessary for each final-year student. The student will be given an engineering problem (or encourage to identify on their own) and gain expertise by problem solving, investigation, research writing and effective presentation of the research outcome in the form of thesis and seminar.

Course Outcomes

CO1: Ability to apply and integrate theory and practical to solve the engineering problems.

CO2: Ability to develop suitable research methodology for the project.

CO3: Ability to explain a project in a technical report.

CO4: Ability to present and defend effectively project proposal to selected audience.

CO5: Ability to identify commercialization potential for proposed project.

PLT421/3
INDUSTRIAL MANAGEMENT AND QUALITY

Course Synopsis
This course introduces productivity management such as competitiveness, ratios, work study, learning rates, and linear programming. It also introduces definitions of quality, its dimensions and views, concepts and techniques of total quality control such as statistical process control, process capability, acceptance sampling, and the relationships between productivity and quality. Where applicable, appropriate operations management software will be introduced.

**Course Outcomes**

CO1: To understand the productivity concepts from different aspects of management

CO2: To understand the Six Sigma management tools.

CO3: To be able to understand the statistical methods used in quality control and improvement

CO4: To understand the methods on how labour can improve their productivity and the measurements used to measure the labour productivity.

**References**


**PLT422/3 MECHATRONIC SYSTEMS**

**Course Synopsis**

This course introduces important concepts of Artificial Intelligence (AI) and their applications in mechatronic systems. The concepts include fuzzy logic, neural network, neuro-fuzzy, genetic algorithm and pattern recognition. The mechatronic systems encompass Industrial Automation, Industrial Robotics and Control of process systems.

**Course Outcomes**

CO1: Ability to organize Artificial Intelligence components in mechatronics systems.

CO2: Ability to display the concepts of pattern recognition and classification.

CO3: Ability to analyze intelligent control with optimal parameter search for complex industrial systems.
CO4:
Ability to analyze simple expert system for specific requirements.

References

PLT 423/3
MATERIAL HANDLING AND IDENTIFICATION
(ELECTIVE B1)

Course Synopsis
This course introduces important concepts of material handling and identification and their applications in automation systems. The concepts include Introduction to Material Transport System, Conveyor system, Storage System, Automated Storage System, Automated Identification and Data Technology, Industrial Machine and Vision System.

Course Outcomes

CO1:
Ability to explain and analyze the material handling system and its relationship with assembly process

CO2:
Ability to explain and analyze the automated storage system

CO3:
Ability to explain and analyze the automated identification and data capture technology systems.

CO4:
Ability to explain and analyze application of industrial machine vision system.

References
2. Plant Layout and Material Handling Innovative Automatic Identification and Location-Based Services

PLT 424/3
AUTOMATED GUIDED VEHICLE
(ELECTIVE B2)
Course Synopsis

This course introduces the students the concepts and design of wheeled and walking robot mechanisms with a study on their kinematics and dynamics aspects. The course also introduces the principles and applications of Autonomous Guided Vehicles (AGV).

Course Outcomes

CO1: Ability to apply various locomotion systems in mobile robotic applications.

CO2: Ability to analyze the force-torque requirements of the mobile robots and select the most suitable actuator.

CO3: Ability to solve the kinematics problems for mobile robots.

CO4: Ability to apply suitable sensors and control systems for the wheeled mobile robot mechanisms.

CO5: Ability to analyze various autonomous guidance systems in mobile robotics application.

References


PLT440/6

FINAL YEAR PROJECT II

Course Synopsis

Small-scaled research project that inclined towards designing is necessary for each final-year student. The student will be given an engineering problem (or encourage to identify on their own) and gain expertise by problem solving, investigation, research writing and effective presentation of the research outcome in the form of thesis and seminar. The research area is mainly on electrical engineering technology.

Course Outcomes

CO1: Ability to apply and integrate theory and practical to solve the engineering problems.

CO2: Ability to develop suitable research methodology for the project.
**CO3:**
Ability to explain a complete project in a technical report (dissertation).

**CO4:**
Ability to present and defend effectively project findings to selected audience.

**CO5:**
Ability to identify commercialization potential for developed project.
Career opportunities:

Robotics and Automation Engineering graduates in these areas will have the ability to engage in the design, research and development, consultancy, education, manufacturing, construction, maintenance, sales and management in many industries such as manufacturing, processing, automotive, aviation and shipping, mining and services, communications and building services and medical industries. Among of the firms that had offered employment opportunities to the graduates of these areas are as follows:

- Vehicle making and installation firms
- Home making appliances firms
- Electronic products firms
- Plant food processors
- Oil and gas companies
- High-tech firms
- Consultant firms
- Engineering & product development firms
- Automation system firms
- Bio-medical engineering firms
- Software development firms
- Research & development agencies
- Hospitals
- Companies, maintenance and repair firms of medical equipment
- Companies, marketing and sale firms of medical equipment
- Manufacturing industry of medical instrumentation
- Education and training (universities, polytechnics and colleges)