Ramaiah University of Applied Sciences

New BEL Road, MSR Nagar, Bangalore – 560054

RAMAIAH UNIVERSITY OF APPLIED SCIENCES

PO, PSO & CO

Programme: Bachelor of Vocation (B.Voc)
in Post-Harvest Technology

Programme Code: 524

Programme Outcome (PO)
Programme Specific Outcome (PSO)
Course Outcomes (CO)

Director – Training and Lifelong Learning
Ramaiah University of Applied Sciences

Registrar
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054

Director – Training and Lifelong Learning
Ramaiah University of Applied Sciences

Faculty of Art and Design

Programme Name: B. Voc. In Post-Harvest Technology

Programme Outcomes (POs)

After undergoing this course students will be able to:

1. To impart knowledge on general education including physics, mathematics, electrical, electronics, sensor applications, control systems, robotics and industrial automation
2. To accord the knowledge on modelling, controlling and testing of the different Mechatronic system applications.
3. To correlate the knowledge of designing, modelling, analyzing and testing of the robotic Systems for Industry Specific applications
4. To develop geometric models, simulate and analyze various mechatronics systems/assemblies for their kinematic and dynamic behavior
5. To impart knowledge on managerial subjects like communication skills, Labor laws, Occupational Health, Safety and Environment, Project Management, Principles of Management and Organizational Behavior

Programme Specific Outcomes (PSOs)

After undergoing this course, the student will be able to:

1. Knowledge and Understanding 2. Practical Skills and 3.Capability/Transferable Skills

1. Explain Physics and Underlying principles of mechatronics systems
2. Describe various sensors, circuitry, components, machine elements, measurement systems, control systems and robotic systems
3. Read and interpret various engineering drawings and their usage related to mechatronic systems, safety regulations, labor laws connected with usage & operation of such mechatronic system
4. Describe various elements of IoT, Industry 4.0 and Understand Future Manufacturing technologies

Practical Skills

1. Identify various mechatronic systems and their applications.
2. Create views of robotic model that can be used in modelling and Simulation Process.
3. Select required sensors, circuitry, systems and networks for Industrial automation
4. Build robotic models, actuation systems and control systems
5. Identify various working stages of Industry 4.0, Sub systems of Internet Of Things and Future Manufacturing Technologies

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Capability/Transferable Skills

After undergoing this course, the student will be able to :

1. Handle the various mechatronic system applications
2. Generate detailed drawings, modelling and analysis reports of various Mechatronic Systems
3. Communicate efficiently, manage and lead teams

Course Outcomes (COs)

Course Title & Code: Mathematics (VGE050)

After undergoing this course students will be able to:

- **CO-1.** understand the different arithmetic operations
- **CO-2.** Use Probability and Statistics and geometry in solving existing problems of industries.
- **CO-3.** Understand the different geometrical concepts with axis and coordinates.
- **CO-4.** use the concepts of trigonometry in solving existing problems

Course Outcomes (COs)

Course Title & Code: Physics in mechatronics (VGE058)

After undergoing this course students will be able to:

- **CO-1.** Identify and analyze different materials and their properties. CO2: gain knowledge on principles related to work, power and energy CO3: know about physics of machines
- **CO-2.** Know about light sources and geometrical optics.
- **CO-3.** Identify and analyze different materials and their properties. CO2: gain knowledge on principles related to work, power and energy CO3: know about physics of machines
- **CO-4.** Know about light sources and geometrical optics.

Course Outcomes (COs)

Course Title & Code: Communication Skills (VGE017)

After undergoing this course students will be able to:

- **CO-1.** acquire proficiency in spoken language
- **CO-2.** acquire proficiency in written language
- **CO-3.** acquire good knowledge in conversation and reading skills
- **CO-4.** become good at professional Etiquette and Goal Setting

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Course Outcomes (COs)

Course Title & Code: Basic Computer Skills (VMS001)

After undergoing this course students will be able to:

- **CO-1.** to identify different tools of Microsoft office
- **CO-2.** to use different tools of Microsoft office like word and excel
- **CO-3.** to prepare MS office-PPT
- **CO-3.** Understanding certain software, applications, programs and explore tools.

Course Outcomes (COs)

Course Title & Code: Basic Electronics Circuits (VMS002)

After undergoing this course students will be able to:

- **CO-1.** Key elements of electronic circuits
- **CO-2.** Utilization of necessary theorems and principles to make electronic circuits
- **CO-3.** Rectifier, filter circuits (AC to DC) and other wave shaping circuits.
- **CO-4.** Transistor and Transistor applications.

Course Outcomes (COs)

Course Title & Code: Basic electrical circuits (VMS003)

After undergoing this course students will be able to:

- **CO-1.** Key elements of electrical circuits (AC and DC)
- **CO-2.** Utilization of necessary theorems and principles to make electrical circuits
- **CO-3.** Single phase AC circuits and magnetic circuits
- **CO-4.** Domestic wiring and wiring materials.

Course Outcomes (COs)

Course Title & Code: Mechanical Engineering Sciences (VGE052)

After undergoing this course students will be able to:

- **CO-1.** Energy Resources and its conversion process for Economic usage
- **CO-2.** Working principle of I C Engine and Turbines
- **CO-3.** Identify different types of materials and
- **CO-4.** Robotics Application and generate the Programming Numerical Codes for the automation

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Course Outcomes (COs)

Course Title & Code: Digital electronics and IC's (VGE024)

After undergoing this course students will be able to:

- **CO-1.** Key elements of digital electronics.
- **CO-2.** Utilization of necessary theorems and principles to make digital electronic circuits
- **CO-3.** Logic gates, flip flops and registers.
- **CO-4.** Multiplexers and DE multiplexers, decoder and encoders, counters and memories

Course Outcomes (COs)

Course Title & Code: Elements of Mechatronics (VGE028)

After undergoing this course students will be able to:

- **CO-1.** Key elements of mechatronics.
- **CO-2.** Sensors and signal conditioning circuits.
- **CO-3.** Pneumatic and hydraulic systems.
- **CO-4.** Basics of embedded systems, modelling and design in mechatronics

Course Outcomes (COs)

Course Title & Code: Engineering Drawing (VMS004)

After undergoing this course students will be able to:

- **CO-1.** Basic representation of drawing concepts and Convert from Three dimensional to two dimensional orthographic Projection of given model
- **CO-2.** Explore the AUTOCAD Software tool with all the commands to generate the Orthographic Views
- **CO-3.** Projection of Points, Lines, Solids and Development of sectioned model in both Manual and AUTOCAD Software
- **CO-4.** Generating Isometric view from Two-Dimensional drawings for both Manual and AUTOCAD Software

Course Outcomes (COs)

Course Title & Code: Wiring and Soldering Practice (VMS005)

After undergoing this course students will be able to:

- **CO-1.** Students will understand the purpose of Wiring and soldering.
- **CO-2.** Students will be able to identify the tools and materials used for Wiring and soldering.
- **CO-3.** Student will be able to explain the safety measures required during soldering.
- **CO-4.** Students will execute appropriate soldering and de-soldering.

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Course Outcomes (COs)

Course Title & Code: Basic Mechanical Workshop **(VMS006)**

After undergoing this course students will be able to:

- **CO-1.** Identify the basic tools used in workshop.
- **CO-2.** Work with tools and develop the fitting, sheet metal and carpentry models as per the given drawing.
- **CO-3.** Understand different types of welding concepts and develop the models with different types of welding machines.

Course Outcomes (COs)

Course Title & Code: Basic electrical and electronics systems **(VGE007)**

After undergoing this course students will be able to:

- **CO-1.** Key elements of electrical circuits (AC and DC)
- **CO-2.** Utilization of necessary theorems and principles to make electrical circuits
- **CO-3.** Single phase AC circuits and magnetic circuits
- **CO-4.** Domestic wiring and wiring materials.

Course Outcomes (COs)

Course Title & Code: Basic Elements of Mechanical System **(VGE010)**

After undergoing this course students will be able to:

- **CO-1.** Understand about the Translational and Rotational Elements
- **CO-2.** Identify the different elements of mechanical system
- **CO-3.** Basic designing aspects of elements based on its application
- **CO-4.** knowledge for building the complete product specification

Course Outcomes (COs)

Course Title & Code: Sensors and Signals **(VGE063)**

After undergoing this course students will be able to:

- **CO-1.** Demonstrate the knowledge of the working principle of various semiconductor devices and circuits
- **CO-2.** Derive mathematical expressions for various parameters in electronic devices and circuits
- **CO-3.** Solve numerical problems related to analog circuits
- **CO-4.** Design simple analog circuits for a given applications

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Course Outcomes (COs)

Course Title & Code: Mechanical Drawing and Assembly (VMS007)

After undergoing this course students will be able to:

- **CO-1.** Generate the Orthographic views manually from the given 3D model
- **CO-2.** Explore the commands on Software to build the Part model and drafting
- **CO-3.** Assemble all the parts to generate the complete Product and Generate BOM
- **CO-4.** Analyze and Interpret the Manufacturing Industry Drawing

Course Outcomes (COs)

Course Title & Code: Electrical and Electronics systems analysis and simulation (VMS008)

After undergoing this course students will be able to:

- **CO-1.** To study basics of electronics and electrical components and their applications in different areas
- **CO-2.** To study different biasing techniques to operate transistor, FET, MOSFET, operational amplifier, battery system, transformers in different modes.
- **CO-3.** Analyze output in different operating modes of different components.
- **CO-4.** Compare design issues, advantages, disadvantages, limitations, applications of basic electronics and electrical components

Course Outcomes (COs)

Course Title & Code: Mechanical System Analysis and Simulation (VMS009)

After undergoing this course students will be able to:

- **CO-1.** Understand the concepts of kinematics and Dynamics of Machines
- **CO-2.** Generate the manual graphical Analysis of Displacement and Position of Mechanisms
- **CO-3.** Hands on Experience on ADAMS Multi body Dynamics Software tool and exercise on the tool will be able acquire the knowledge on Mechanisms
- **CO-4.** Interpret and Analyze real type model

Course Outcomes (COs)

Course Title & Code: Basic Hydraulics and Pneumatics (VMS009)

After undergoing this course students will be able to:

- **CO-1.** Understand the Concepts of Fluid power system
- **CO-2.** Difference between Hydraulic and pneumatic System
- **CO-3.** knowledge of key elements like Actuators, motors and Cylinders of the system
- **CO-4.** knowledge of signal processing elements helps to build the complete Fluid power system

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Course Outcomes (COs)

Course Title & Code: Measurement and Control systems **(VGE051)**

After undergoing this course students will be able to:

- **CO-1.** understand measurement systems-analog meters
- **CO-2.** analyze systems related to digital measurement
- **CO-3.** Understand CRO and DSO in measurement and analysis.
- **CO-4.** understand the basics of control systems.

Course Outcomes (COs)

Course Title & Code: Communication systems **(VGE019)**

After undergoing this course students will be able to:

- **CO-1.** Understand Communication systems, Modulation and demodulation techniques.
- **CO-2.** analyze systems related to digital communication-pulse modulation
- **CO-3.** understand systems related to digital communication-multiplexing
- **CO-4.** understand technology involved in optical fibre communication

Course Outcomes (COs)

Course Title & Code: Computer Applications and Networks **(VMS010)**

After undergoing this course students will be able to:

- **CO-1.** Able to learn IEEE standards for LAN Ethernet.
- **CO-2.** Compare and recommend suitable networking protocols for communication networks.
- **CO-3.** Understanding the different Transmission media.
- **CO-4.** Understanding the different internet communication services.

Course Outcomes (COs)

Course Title & Code: Modelling and Building of Mechatronics System-1 **(VMS011)**

After undergoing this course students will be able to:

- **CO-1.** Understand Concepts of Modelling the Mechanical and Electronic system
- **CO-2.** Modelling in the Individual Platforms of MATLAB and ADAMS Software
- **CO-3.** Building the Mechatronics system using Co-simulation aspects
- **CO-4.** Generate the solution by using all the methodologies to the existing Problem virtually and apply to the realistic scenario

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Course Outcomes (COs)

Course Title & Code: Mechatronics Project -1 **(VMS012)**

After undergoing this course students will be able to:

- **CO-1.** Identify the need for developing a new or improving an existing product or system through An organized survey of literature
- **CO-2.** Design and model the product or system to meet the design specifications
- **CO-3.** Evaluate and justify the performance of the modelled system
- **CO-4.** Demonstrate the working of the product or system and make a presentation
- **CO-5.** Write a technical report

Course Outcomes (COs)

Course Title & Code: IOT and Industry 4.0 **(VGE0046)**

After undergoing this course students will be able to:

- **CO-1.** Assess the genesis and impact of IoT applications, architectures in real world. C
- **CO-2.** Compare different Application protocols for IoT.
- **CO-3.** Infer the role of Data Analytics and Security in IoT.
- **CO-4.** Understanding the role IOT in Industrial Evolution

Course Outcomes (COs)

Course Title & Code: Cloud storage and computing **(VGE0016)**

After undergoing this course students will be able to:

- **CO-1.** Learning of cloud computing technologies and services
- **CO-2.** create new applications and soft wares through cloud
- **CO-3.** Understand the file storage and Backup in cloud.
- **CO-4.** cloud computing is that services previously provided by IT administrators will be accessible to any user at any time

Course Outcomes (COs)

Course Title & Code: Future Manufacturing Technologies **(VGE038)**

After undergoing this course students will be able to:

- **CO-1.** Understand the difference between Traditional and Non-traditional Machining Process
- **CO-2.** New Various technologies used for Machining, Micro-Machining and Forming Process
- **CO-3.** New trends in the Manufacturing Technologies like MEMS and Nano Technology
- **CO-4.** Basic understanding of Nano tubes, Nano wires and Nano Fabrication methods

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Course Outcomes (COs)

Course Title & Code: PLC and its applications **(**VMS013**)**

After undergoing this course students will be able to:

- **CO-1.** Compare conventional sequential control with programmable logic control system
- **CO-2.** Develop programs using different PLC programming languages for sequential and continuous process
- **CO-3.** Interface analog and digital input/ output devices with PLC using different communication protocol
- **CO-4.** Test the PLC based system and troubleshoot the errors associated with it with examples.

Course Outcomes (COs)

Course Title & Code: HMI, SCADA AND ROBOTICS **(**VMS014**)**

After undergoing this course students will be able to:

- **CO-1.** build HMI screen
- **CO-2.** create new SCADA application
- **CO-3.** understand the types of projects based on SCADA
- **CO-4.** write and run programs for robotics manipulator (ABB)

Course Outcomes (COs)

Course Title & Code: INDUSTRIAL AUTOMATION **(**VMS015**)**

After undergoing this course students will be able to:

- **CO-1.** analyze industrial automation configurations
- **CO-2.** simulate and build circuits related to industrial drives
- **CO-3.** understand pneumatic and hydraulic systems in automation
- **CO-4.** understand technology involved in present industrial automation

Course Outcomes (COs)

Course Title & Code: Labour Laws, Occupational health and Safety **(**VGE047**)**

After undergoing this course students will be able to:

- **CO-1.** Understand labour laws, Occupational health and safety
- **CO-2.** know about Key principles and aim of occupational health and safety (OHS) programs
- **CO-3.** Learn about governments enact labour laws on industrial relations and rights of labour.
- **CO-4.** Explain about economic and social justice to workforce in any organization

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Course Outcomes (COs)

Course Title & Code: Principles of Management **(**VGE059**)**

After undergoing this course students will be able to:

- **CO-1.** Describe the primary functions of management and roles of managers
- **CO-2.** Explain how managers align the planning process with company vision and mission
- **CO-3.** Identify common organizational structures and describe staffing process
- **CO-4.** Explain the importance of directing and need for control within the organization

Course Outcomes (COs)

Course Title & Code: Project Management **(**VGE062**)**

After undergoing this course students will be able to:

- **CO-1.** To demonstrate practical knowledge of the functional areas of business
- **CO-2.** To demonstrate highly developed communication skills, evaluate complex financial and operational data and information for decision making
- **CO-3.** To evaluate strategic objectives that enhance organizational effectiveness and operational performance

Course Outcomes (COs)

Course Title & Code: Modelling and Building of Mechatronics System-2 **(**VMS016**)**

After undergoing this course students will be able to:

- **CO-1.** Modelling of Spring-Mass Damper system and its Characteristics
- **CO-2.** Modelling of Anti-Lock Braking System and difference of ABS and Non-ABS
- **CO-3.** Modelling and Understanding the concepts of Back Hoe System
- **CO-4.** Modelling and working on 6-DOF Robot Manipulator

Course Outcomes (COs)

Course Title & Code: Seminars and Presentations **(**VMS017**)**

After undergoing this course students will be able to:

- **CO-1.** Key elements of Industrial Standards
- **CO-2.** Mechatronics Occupational and industrial standard Frame work

Course Outcomes (COs)

Course Title & Code: Mechatronics Project -2 **(**VMS018**)**

After undergoing this course students will be able to:

- **CO-1.** Identify the need for developing a new or improving an existing product or system

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through An organized survey of literature

CO-2. Design and model the product or system to meet the design specifications

CO-3. Evaluate and justify the performance of the modelled system

CO-4. Demonstrate the working of the product or system and make a presentation

CO-5. Write a technical report

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