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 Product Design and Modelling

Programme Code: 512

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

Faculty of Art and Design

Programme Name: B. Voc. In Product Design and Modelling

Programme Outcomes (POs)

After undergoing this course students will be able to:

PO-1. To impart knowledge on general education including material science, mechanics, electrical and electronics, computer applications, economics and sociology

PO-2. To impart training on effective application of the elements of design to build forms and structures to communicate ideas of products and systems

PO-3. To use appropriate materials to realize intended design ideas

PO-4. To impart training on physical and virtual tools to accurately model and build a design concept to meet client requirements

PO-5. To impart knowledge on managerial subjects and general subjects like principles of management, accountancy, customer relationship, behavioral skills, communication skills, for successful operation of product model making business

Programme Specific Outcomes (PSOs)

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

1. Explain the principles involved in general education
2. Describe the application of design elements for creating three dimensionalforms
3. Describe the tools and techniques for creating virtual and physical models usingappropriate materials
4. Read and understand various safety regulations, labour laws connected withmodel making and manufacturing Industry

Practical Skills

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

1. Prepare and interpret 2D drawings to create representational physicalmodels
2. Practice construction of various 3D forms and structures
3. Operate various equipment and machinery involved in cutting andfinishing raw materials for model making
4. Build mock up models and prototypes using appropriate material andsurface finishes

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Capability/Transferable Skills

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

1. Develop a project report to set up a model making studio
2. Manage operations, finances, accounting and tax calculations
3. Communicate effectively with suppliers and customers
4. Build team and manage team
5. Use modern ICT tools for efficient operation of the model making business

Course Outcomes (COs)

Course Title & Code: Communication skills-1 **(**VGE017**)**

After undergoing this course students will be able to:

CO-1. Understand the importance of communication skill
CO-2. Familiar with the complete business communications procedures and techniques
CO-3. effective business correspondence with brevity and clarity
CO-4. Demonstrate his/her ability to write error free while making an optimum use of correct Business Vocabulary & Grammar

Course Outcomes (COs)

Course Title & Code: Computer Applications-1 **(**VGE021**)**

After undergoing this course students will be able to:

CO-1. Evaluate and use office productivity software appropriate to a given situation
CO-2. Ability to create and edit documents, spread sheets, and presentations
CO-3. Develop and presentation of material produced by office productivity applications.
CO-4. prepare the documents for office and personal work

Course Outcomes (COs)

Course Title & Code: Basic Electrical System **(**VGE0008**)**

After undergoing this course students will be able to:

CO-1. Understand the basic electrical systems
CO-2. Students will gain knowledge regarding various methods of electrical systems
CO-3. Student will gain knowledge digital electronics
CO-4. Student will gain knowledge on electronic systems and its applications

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Course Outcomes (COs)

Course Title & Code: Foundation Sketching (VPD001)

After undergoing this course students will be able to:

- **CO-1.** Describe the methods and drawing basic drawing
- **CO-2.** Discuss the principles and techniques used to develop various views of pictorial representation
- **CO-3.** Create isometric and oblique sketches
- **CO-4.** Proficiently use single point two point and three point perspective for manual sketching and shading

Course Outcomes (COs)

Course Title & Code: Manual Rendering (VPD002)

After undergoing this course students will be able to:

- **CO-1.** Apply colors and shading technique
- **CO-2.** Apply the light and shading technique
- **CO-3.** Apply colors and texture technique
- **CO-4.** Create visual representations and finished designs for presentation

Course Outcomes (COs)

Course Title & Code: Physical Form Exploration (VPD003)

After undergoing this course students will be able to:

- **CO-1.** Describe various processes involved in physical model making
- **CO-2.** Explain various tools and machines used for model making
- **CO-3.** Choose appropriate materials to achieve desired form and finish in a physical model
- **CO-4.** Create form exploration models with different materials

Course Outcomes (COs)

Course Title & Code: Engineering Mechanics (VGE033)

After undergoing this course students will be able to:

- **CO-1.** understand the basic engineering mechanics and applications in design
- **CO-2.** Calculate the centroid, first moment and second moment of area
- **CO-3.** Understand the velocity and acceleration of rigid bodies and its applications
- **CO-4.** Analyze the forces acting on rigid body during translation motion.

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Course Outcomes (COs)

Course Title & Code: Computer Applications -II (VGE022)

After undergoing this course students will be able to:

- **CO-1.** explain the term browsing and perform browsing on the Internet
- **CO-2.** identify and use the basic features of email services
- **CO-3.** identify and use basic models of chat
- **CO-4.** prepare the documents for office and personal work

Course Outcomes (COs)

Course Title & Code: Environmental Science (VGE034)

After undergoing this course students will be able to:

- **CO-1.** Explain the multidisciplinary nature of environmental study
- **CO-2.** Classify and explain the various natural resources and their associated problems, ecosystems and environmental pollution
- **CO-3.** Discuss various social issues pertaining to the environment including sustainable development, energy issues and disaster management
- **CO-4.** Discuss biodiversity at local, national and global levels

Course Outcomes (COs)

Course Title & Code: Materials for Product Modelling (VPD004)

After undergoing this course students will be able to:

- **CO-1.** Explain the physical model making materials
- **CO-2.** Describe various processes involved in physical model making
- **CO-3.** Explain various tools and machines used for model making
- **CO-4.** Choose appropriate materials to achieve desired form and finish in a physical model

Course Outcomes (COs)

Course Title & Code: CAD Drawing (VPD005)

After undergoing this course students will be able to:

- **CO-1.** Describe the conventions used in projections of geometric entities and interpret the same
- **CO-2.** Sketch and draw orthographic and isometric projections for the geometric entities in specified positions
- **CO-3.** Draw orthographic and isometric projections for complex geometries.
- **CO-4.** Demonstrate competency in using CAD tool for drawing geometric projections

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Course Outcomes (COs)

Course Title & Code: Physical Model Making-I **(VPD006)**

After undergoing this course students will be able to:

- **CO-1.** Describe various processes involved in physical model making
- **CO-2.** Explain various tools and machines used for model making
- **CO-3.** Choose appropriate materials to achieve desired form and finish in a physical model
- **CO-4.** Create form exploration models with different materials

Course Outcomes (COs)

Course Title & Code: Electronic System **(VGE027)**

After undergoing this course students will be able to:

- **CO-1.** To study basics of semiconductors and their applications in different areas.
- **CO-2.** To study different biasing techniques to operate transistor, FET , MOSFET and operationalamplifier in different modes.
- **CO-3.** Analyze output in different operating modes of different semiconductor devices.
- **CO-4.** Compare design issues, advantages, disadvantages, limitations, applications of basic electroniccomponents

Course Outcomes (COs)

Course Title & Code: Communication Skills II **(VGE066)**

After undergoing this course students will be able to:

- **CO-1.** CO1: Be familiar with the complete business communications procedures and techniques
- **CO-2.** CO2: Participate in an online learning environment successfully by developing the implication-based understanding of Paraphrasing, deciphering instructions, interpreting guidelines, discussion boards & Referencing Styles
- **CO-3.** Demonstrate his/her ability to write error free while making an optimum use of correct Business Vocabulary & Grammar
- **CO-4.** Distinguish among various levels of organizational communication and communication barriers while developing an understanding of Communication as a process in an organization
- **CO-5.** Draft effective business correspondence with brevity and clarity
- **CO-6.** Stimulate their Critical thinking by designing and developing clean and lucid writing skills
- **CO-7.** Demonstrate verbal and non-verbal communication ability through presentations

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Course Outcomes (COs)

Course Title & Code: Elements of Social Science and Ethics **(VGE064)**

After undergoing this course students will be able to:

- **CO-1.** Explain society and ethics
- **CO-2.** Identify the factors comprising sociocultural system and its impact on the society
- **CO-3.** Identify social issues/problems/conflicts
- **CO-4.** Analyze the factors contributing to societal issues
- **CO-5.** Suggest possible solutions to the identified social / civic issues / problems / conflicts

Course Outcomes (COs)

Course Title & Code: 3D Virtual Modelling **(VPD007)**

After undergoing this course students will be able to:

- **CO-1.** Explain various techniques involved in drawing and 3D modelling
- **CO-2.** Create 3D models based on parameters and constraints and interfacing
- **CO-3.** Develop parts and product assemblies using 3D modelling software
- **CO-4.** Create the detailing drawings and bill materials

Course Outcomes (COs)

Course Title & Code: Digital product Illustration **(VPD008)**

After undergoing this course students will be able to:

- **CO-1.** Explain the use of digital software in field of design
- **CO-2.** Apply essential graphics and visual communication skills in designing
- **CO-3.** Create visual poster and edit required images using designing software
- **CO-4.** Apply different effects using the vector based software
- **CO-5.** Recommend appropriate printing environment for printing a poster

Course Outcomes (COs)

Course Title & Code: Physical Model Making II **(VPD009)**

After undergoing this course students will be able to:

- **CO-1.** Describe various processes involved in physical model making
- **CO-2.** Explain various tools and machines used for model making
- **CO-3.** Choose appropriate materials to achieve desired form and finish in a physical model
- **CO-4.** Create form exploration models with different materials

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Course Outcomes (COs)

Course Title & Code: Banking and Taxation (VGE005)

After undergoing this course students will be able to:

- **CO-1.** Describe the role and structure of Indian banking system
- **CO-2.** Explain functions of commercial banks and its products and role of reserve bank of India
- **CO-3.** Identify and comply with the relevant provisions of the Income Tax Act as it relates to the income tax of individuals
- **CO-4.** Able to compute income under various heads and tax liability

Course Outcomes (COs)

Course Title & Code: Business Communication (VGE013)

After undergoing this course students will be able to:

- **CO-1.** Explain the process of communication
- **CO-2.** Apply the steps involved in communication
- **CO-3.** Compose correct sentences according to the context
- **CO-4.** Devise precise paragraphs for effective message transmission

Course Outcomes (COs)

Course Title & Code: Materials for product development (VGE049)

After undergoing this course students will be able to:

- **CO-1.** Describe materials used in product development
- **CO-2.** Explain properties and application of polymer materials used in a product development
- **CO-3.** Discuss various industrial applications of composite materials
- **CO-4.** Identify materials for appropriate industrial applications

Course Outcomes (COs)

Course Title & Code: 3D Surface Modelling-1 (VPD010)

After undergoing this course students will be able to:

- **CO-1.** Explain the application of computer graphics for visualizing concepts
- **CO-2.** Describe modeling techniques and editing methods for surface generation
- **CO-3.** Apply modeling techniques to create curves and surfaces
- **CO-4.** Analyze created curves and surfaces to achieve realistic model

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Course Outcomes (COs)

Course Title & Code: Model Machining Process **(VPD011)**

After undergoing this course students will be able to:

- **CO-1.** Describe materials and their suitability to meet the machinability requirement
- **CO-2.** Identify appropriate machining process for various metals
- **CO-3.** Explain various types of machining techniques for metallic materials
- **CO-4.** Compare different machining processes applicable for a given material
- **CO-5.** CO5 Relate appropriate processes and suitable materials for machining process a specifiedpart/product

Course Outcomes (COs)

Course Title & Code: Physical Model Detailing and surface Finishing **(VPD012)**

After undergoing this course students will be able to:

- **CO-1.** Describe various processes involved in physical model making
- **CO-2.** Explain various tools and finishing technique methods
- **CO-3.** Choose appropriate materials to achieve desired form and finish in a physical model
- **CO-4.** Create form exploration and finishing technique and product visualize

Course Outcomes (COs)

Course Title & Code: Principle 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: Cost Estimation and Project management **(VGE069)**

After undergoing this course students will be able to:

- **CO-1.** Understand how estimating methods are used , to apply risk analysis to cost estimating. The estimating process of life-cycle costs and how estimating tools are applied
- **CO-2.** To demonstrate practical knowledge of the functional areas of business
- **CO-3.** To demonstrate highly developed communication skills,evaluate complex financial and operational data and information for decision making
- **CO-4.** To evaluate strategic objectives that enhance organizational effectiveness and operational performance

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Course Outcomes (COs)

Course Title & Code: Mechanism for Product design (VGE070)

After undergoing this course students will be able to:

- **CO-1.** Describe simple mechanisms and underlying principles
- **CO-2.** Classify mechanisms and identify their applications
- **CO-3.** Propose mechanisms for products to achieve desired functionality
- **CO-4.** Demonstrate the working principles through digital and physical model

Course Outcomes (COs)

Course Title & Code: Design Essentials (VPD013)

After undergoing this course students will be able to:

- **CO-1.** Explain the design process and stages of product design cycle and product life cycle
- **CO-2.** Discus the concept generation techniques
- **CO-3.** Apply the gestalt principles and elements of design to develop digital design
- **CO-4.** Create product concepts using hand tools and digital tools

Course Outcomes (COs)

Course Title & Code: 3D Surface Modelling II (VPD014)

After undergoing this course students will be able to:

- **CO-1.** Explain the application of computer graphics for visualizing concepts
- **CO-2.** Describe modeling techniques and editing methods for surface generation
- **CO-3.** Apply modeling techniques to create curves and surfaces
- **CO-4.** Analyse created curves and surfaces to achieve realistic model

Course Outcomes (COs)

Course Title & Code: Group Project -1 (VPD015)

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

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Course Outcomes (COs)

Course Title & Code: Labour laws, Occupational health and safety (VGE047)

After undergoing this course students will be able to:

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

Course Outcomes (COs)

Course Title & Code: Entrepreneurship development (VGE068)

After undergoing this course students will be able to:

- **CO-1.** Define entrepreneur and entrepreneurship
- **CO-2.** Identify essential qualities' of entrepreneurship
- **CO-3.** Analyze the business environment in order to identify business opportunities
- **CO-4.** Identify the elements of success of entrepreneurial ventures
- **CO-5.** Evaluate the effectiveness of different entrepreneurial strategies
- **CO-6.** Interpret their own business plan

Course Outcomes (COs)

Course Title & Code: Organizational Behavior (VGE056)

After undergoing this course students will be able to:

- **CO-1.** Identify the elements of operations management and organization
- **CO-2.** Summarize operations scheduling, management of quality, and facilities planning in operations management
- **CO-3.** Understand the importance of inventory management, forecasting and supply chain management
- **CO-4.** Analyze and evaluate various facility alternatives and their capacity decisions, develop a balanced line of production & scheduling and sequencing techniques in operation environments

Course Outcomes (COs)

Course Title & Code: Work Portfolio (VpD016)

After undergoing this course students will be able to:

- **CO-1.** Describe the process required to develop a portfolio
- **CO-2.** Explain the importance of portfolio
- **CO-3.** Develop effective and cogent information graphics using digital tools
- **CO-4.** Create visual representations and finished designs for presentation work

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Course Outcomes (COs)

Course Title & Code: Reverse Engineering and rapid Prototyping **(VpD017)**

After undergoing this course students will be able to:

- **CO-1.** Explain the Reverse Engineering (RE) Methodology
- **CO-2.** Understand RE and Rapid Prototyping Technology
- **CO-3.** Apply RE applications in consumer and automotive products
- **CO-4.** Design and development of virtual model and physical model using RP software

Course Outcomes (COs)

Course Title & Code: Group Project -2 **(VPD018)**

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 throughAn 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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